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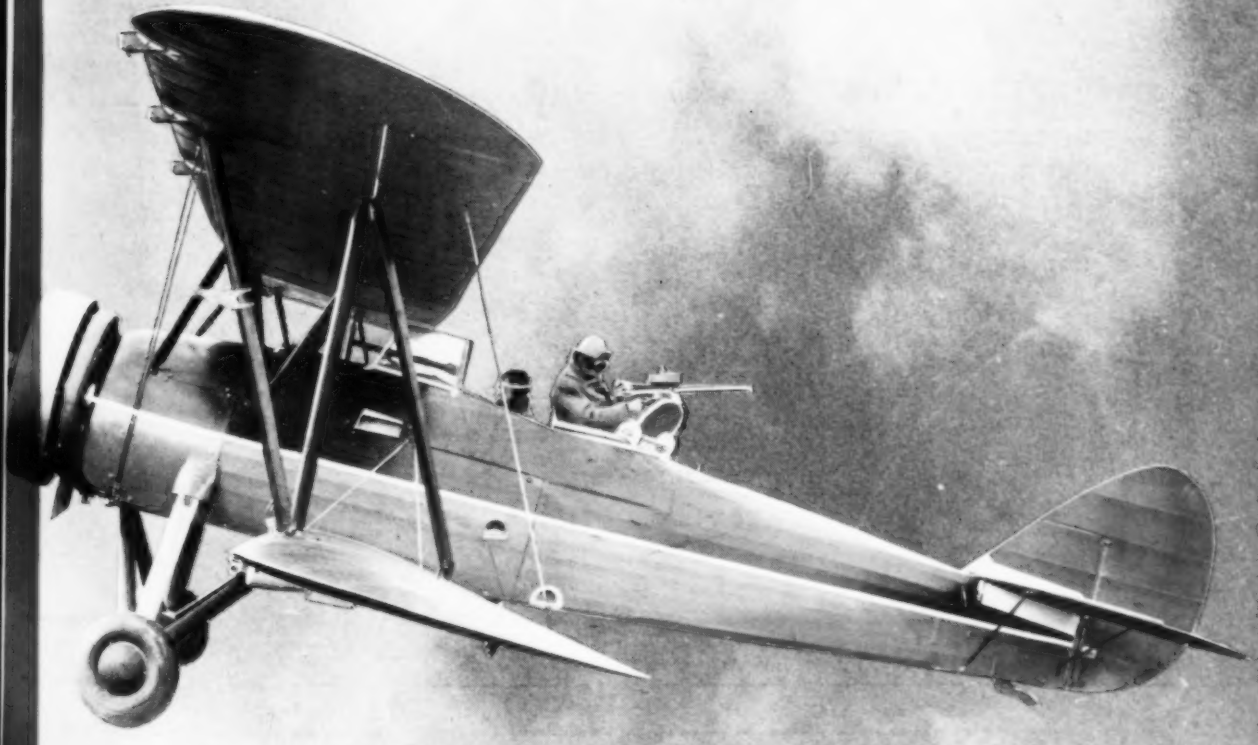

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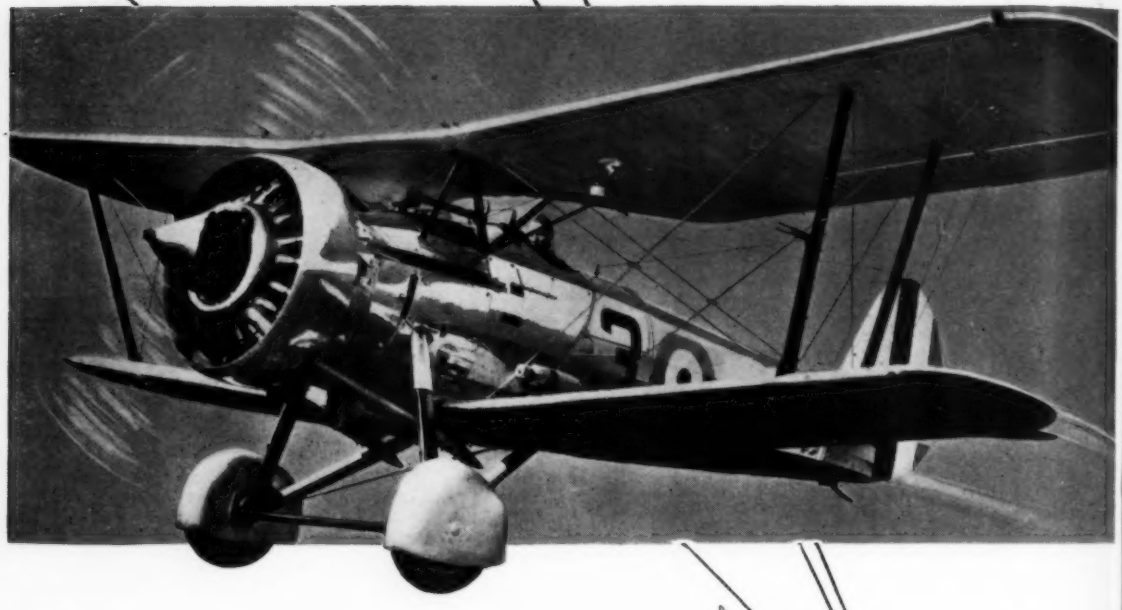

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FLIGHT

The AIRCRAFT ENGINEER AND AIRSHIPS

First Aeronautical Weekly in the World. Founded January, 1909

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice and Progress of Aerial Locomotion and Transport

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DIARY OF CURRENT AND FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list:—

1933.

June 3-5. Aircraft Club (Harrogate) Gliding Camp, Ingleby, Greenhow.
June 4. Skegness Flying Meeting.
June 4. Maidstone Ae.C. "At Home."
June 5. "Morning Post" Race, Heston.
June 5. Northamptonshire Ae.C. Annual Air Pageant.
June 7. Household Brigade Flying Club Meeting.
June 10. Lincs. Ae.C. Air Pageant and Opening of Aerodrome at Holton-le-Clay, Grimsby.
June 10. Henly's Rally, Heston.
June 10. Close of Royal Tournament, Olympia.
June 10. Portsmouth Ae.C. Opening, 3.15 p.m.
June 11. International Meeting, Brussels.
June 15-16. B.G.A. Gliding Meeting at Huish Hill.
June 15-18. Aero Club of France Tourist 'Plane Meeting, Orly.
June 16. Mayor's Aerial Garden Party, Eastbourne.
June 16. R.A.F. Staff College, Andover, "At Home."
June 16-17. Opening of Inverness Municipal Airport.
June 17. Bristol Airport Flying Meeting.
June 17. S.B.A.C. Race, Shoreham-Bristol.
June 17. Charity Air Display at Maidstone Airport.
June 17-18. Ae.C. du Rhone International Meeting, Lyon.
June 20. Princess Mary's R.A.F. Nursing Services Afternoon Reception, Claridge's.
June 21. Official Opening of Norwich Municipal Airport by H.R.H. the Prince of Wales.
June 23. R.A.F. Dinner Club Dinner, Connaught Rooms.
June 24. Royal Air Force Display, Hendon.
June 24. Comrades of the R.A.F. Rally at Thames House.
June 26. S.B.A.C. Aircraft Display and Exhibition, Hendon.
June 27. Press Visit to the National Physical Laboratory, Teddington.
July 1. Merseyside Aviation Display and Opening of Speke Aerodrome, Liverpool.
July 1-4. U.S. National Air Races, Los Angeles Airport.
July 2. 12-Hour Contest of Distance, Angers.
July 2-3. Rotterdam Air Display.
July 8. King's Cup Air Race, Hatfield.

EDITORIAL COMMENT

ESTABLISHED by *l'Aero Club de France* in commemoration of the late Monsieur Deutsch de la Meurthe, whose generosity did much to foster aviation in the early days, the new *Coupe Deutsch* was won by Detré on a Potez monoplane fitted with 300-h.p. Potez engine at an average speed of just over 200 miles per hour. At the moment few details are available, but it would appear that out of the seven competitors who passed the qualifying trials some time ago, six started in the race, one failed to start, and three finished. That is not a very good percentage, but until further particulars are to hand it is impossible to assess the reasons for the failure of 50 per cent. of the starters to finish the course. There is a good deal of consolation in the fact that the only British challenger, Flt. Lt. Nick Comper, who was flying the "Gipsy-Swift" entered by the Prince of Wales in last year's King's Cup Race, completed the course. His average speed was low (about 142 m.p.h. according to reports), and certainly did not represent anything like the real straightforward speed of the "Swift," with the "boosted" "Gipsy Major" engine. Until fuller particulars come in, there is satisfaction in knowing that not only did Comper finish the race, but he flew his machine across from Heston to Etampes, and presumably will fly it back again. The "Gipsy-Swift," although a fast machine, is no mere racing freak, and it is known that with the original "Gipsy III" engine it was capable of more than 160 m.p.h. With the "boosted" "Gipsy Major" is should do something like 180 m.p.h., which was the speed of Delmotte's Caudron monoplane (Renault engine) in the race, and which gained for him second place.

"La Coupe Deutsch"

The regulations for the revived *Coupe Deutsch* are so drawn up as to cover both the international and the national aspect. In the former there is the new "cup," which is an *objet d'art* valued at 20,000 francs, and a first prize of 100,000 francs. The aero club of the nation winning the race each year will hold the "cup" until the following year.

When a country has won the cup three times (not necessarily consecutively) it becomes the permanent holder of it.

In addition to the Deutsch Cup and the prize of 100,000 francs, the French Air Ministry has donated altogether three million francs to the race, for the encouragement of French aviation. One million francs is set aside for French competitors who take part in the race. One million francs is divided among French competitors in accordance with their international placing, and one million francs is shared out to them according to their French placing. The prizes are awarded on a sliding scale, in accordance with the speeds attained. Thus, at the speed averaged by Detré he will be able to claim something like three quarters of a million francs. It would seem that the French Air Ministry became afraid that its generosity had over-encouraged French competitors, as a few days ago it asked the Aero Club of France to postpone the race in the interests of safety. This the club could not, of course, do under the regulations of the F.A.I., and the race was planned to take place on Sunday last, May 28. Bad weather resulted in postponement from hour to hour, and finally until Monday, May 29, when the race was held.

It is of interest to recall that the last *Coupe Deutsch* race was held on September 30, 1922. Like this year's event it took place at Etampes, but the start and finish was the Villesauvage aerodrome, and the turning point was La Marmogne, situated 50 km. distant. The competitors had to make three out-and-home flights over this course, giving a total distance of 300 km. (186 miles). France, Italy and Great Britain were represented, and there was no limit to engine capacity. The Italian challenger, Brack-Papa, was flying a 700-h.p. Fiat machine, but failed to cross the startling-line properly and was disqualified, although he was timed, and his speed worked out at 179 m.p.h.

"Jimmy" James, flying the "Gloster Mars I," fitted with Napier "Lion" engine, made a good start, but returned and landed soon afterwards. He explained that he had carried his map on a piece of string around his neck, and that the draught blew the map out into the slipstream and nearly choked him. For the satisfaction of knowing exactly what speed the "Mars I" could do, it was put over the measured course some days after the race, and averaged 211·7 m.p.h.

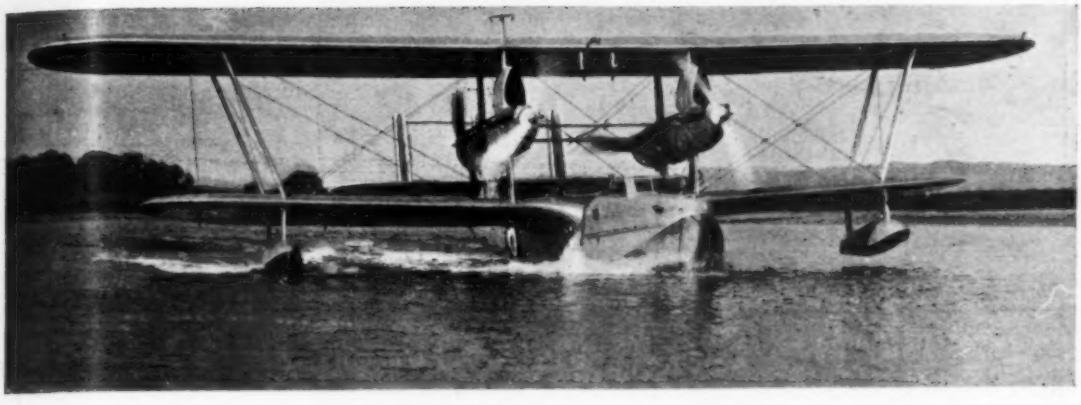
The 1922 *Coupe Deutsch* was won by the French pilot Lasne, who flew a Nieuport-Delage biplane fitted with 320-h.p. "Hispano" engine. His average speed for the 186 miles was 179·6 m.p.h.

This year the Deutsch race was limited to an engine capacity of 8 litres. In spite of this, however, and of the much greater distance, the speed went up to over 200 m.p.h. The winning machine was fitted with a Potez radial air-cooled supercharged engine, said to develop 310 b.h.p., so that the powers of the 1922 and 1933 winners are comparable. The 20 m.p.h. gain in speed during the 11 intervening years may thus, presumably, be ascribed to improvements in aerodynamic efficiency. It is not, however, very comforting to reflect that whereas the "Potez 53," flown by Detré this year, is an out-and-out racing machine, a low-wing cantilever monoplane with retractable undercarriage and its radial engine enclosed in a N.A.C.A. cowl, the 1922 "Nieuport-Delage" biplane was a plain single-bay biplane, which to-day would not make a bad single-seater fighter if room could be found for the guns. Its landing speed, which appeared high enough to us in 1922, would to-day be regarded as very moderate, whereas the "Potez 53," with a wing loading of more than 25 lb./sq. ft., requires a skilled pilot to handle it. Thus, even this gain in aero-dynamic efficiency does not represent any very real practical advance, since it is obtained at the expense of landing speed. Had it been achieved for the same landing speed as that of the 1922 winner there would have been real progress to record.

This year the limitation was engine capacity. As we said in these columns a couple of weeks ago, we are by no means convinced that this is a good basis to take. But we believe that a limit on engine weight would be more likely to lead to sound development.

The only other limitation we would impose is on landing speed. We are, of course, aware that there is no such thing as an absolutely safe landing speed. The fact remains that, other things being equal, the lower the landing speed of an aeroplane the less dangerous it becomes. Before this year's race the machines had to do a qualifying test to show themselves capable of a certain maximum speed. Tests of minimum speed would not form a very complicated addition to the qualifying tests. The regulations would then boil down to a limit on engine weight and a limit on minimum speed.

THE DEUTSCH CUP PILOTS: From left to right, Arnoux, Delmotte, Comper, Detre, Lemoine and Salel.



SHORT "SINGAPORE MARK II" FLYING-BOAT

2 R-R. "Kestrel" II MS. and 2 R-R. "Kestrel" III MS.

THE "Singapore Mark II" was designed to meet the requirements of the Air Ministry for a high-performance flying-boat capable of carrying out long-range open sea reconnaissance duties.

An almost essential feature in aircraft operating at sea and probably several hundreds of miles away from a base, is that the pilot should be relieved of all anxieties resulting from engine failure. This important point was very clearly demonstrated during the long North Sea patrols carried out at the time of the Great War, when it would be no exaggeration to say that the operating pilots feared more the breakdown of an engine, with the twin-engined boats then in use, than any possible attacks from the enemy. Improved technique in design undoubtedly lessens this feeling of insecurity, as engine reliability has considerably increased, and the aerodynamic qualities of the aircraft themselves are of a much higher order. Even when three engines are fitted, however, the prospect of a long flight with only two engines in operation, especially in bad weather, is not one to be lightly undertaken.

It was, therefore, considered desirable that in the design of the "Singapore II" four engines should be fitted in order to eliminate entirely any risk of a forced landing in the event of failure of one engine. That an adequate margin has been secured is clearly shown by the fact that the aircraft will maintain height at full load with the two rear engines only running.

This question of engine failure has been seriously considered by Imperial Airways, and they, also, are of the opinion that to maintain reliability of service on long-distance civil routes four engines are almost a necessity.

Regarding the actual arrangement of the engines, this is a matter which depends on the actual aircraft to which they are fitted. Both the tandem and "in line" arrangements have their advantages, but in the case of the "Singapore" II, with its relatively small wing area and large diameter airscrews consequent upon using engines with a low gear ratio, it was considered that the tandem arrangement would be the more suitable. Different considerations ruled in the case of the "Scipio" commercial flying-boats, the chief of which was that it was desired to use air-cooled engines, and some doubt was expressed at the time as to whether the rear engines could be satisfactorily cooled.

Every effort was made in the "Singapore Mark II" to produce a "clean" structure, and a glance at the photographs will show how successfully this was accomplished, especially when it is realised that the first flights were made over three years ago.

Perhaps the most striking feature is the mounting of the engines on single front and rear interplane struts, an innovation which was viewed with much misgiving in many quarters. Severe testing under service conditions fully vindicated this novel arrangement of engine mounting, and it has since been adopted in many other types of aircraft. The struts from the hull to the lower wing were dispensed with, being replaced by a robust lower centre-section, well faired into the hull. In spite of being fitted with four engines, the L/D of the machine was 11 per cent. higher than the original "Singapore Mark I" obtained from comparable model tests in the wind tunnel, the two machines having practically the same overall dimensions.

Another important feature of the "Singapore II" is the great improvement that has been made in the shape

SHORT "SINGAPORE II."
4 Rolls-Royce "Kestrel" Engines

Dimensions

	ft. in.	m.
Length o.a.	64 0	19,50
Wing span (upper)	90 0	27,45
Wing span (lower)	73 0	22,25
Height o.a. (off trolley)	24 3	7,40
Total wing area	1,750 sq. ft.	(162,6 m²)

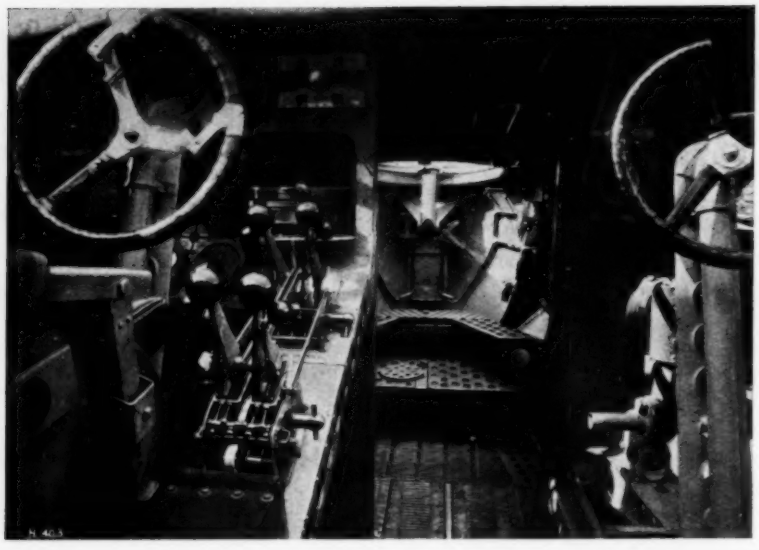
Weights

	lb.	kg.
Tare weight	18,350	8 350
Disposable load	9,400	4 270
Normal loaded weight	27,750	12 620
Max. permissible wt.	32,000	14 540
Ratio gross wt. : tare wt. (normal)	1·513	
Ratio gross wt. : tare wt. (maximum)	1·745	

Performance

Maximum speed at 2,000 ft. (600 m.)	138 m.p.h. (222 km./h.).
Maximum speed at 10,000 ft. (3 050 m.)	125·5 m.p.h. (202 km./h.).
Cruising speed	105 m.p.h. (169 km./h.).
Range at constant cruising speed	1,100 miles (1 770 km.).
Maximum rate of climb	680 ft./min. (3,47 m./sec.).
Service ceiling	12,200 ft. (3 720 m.).

The performance shown above relates to the machine fitted with water radiators. A considerable saving in weight and gain in performance would result if evaporative cooling became a standard fitment.



"THE OFFICE": The pilots' cockpit in the "Singapore II." Through the open door can be seen the bow gunner's position.

of the planing bottom. A large amount of research work has been carried out in the tank at Short Brothers with the object of eliminating the tendency towards longitudinal instability on the water at high speeds, which is a defect practically common to all flying-boats.

This question of dynamic stability both of floats and hulls is a very complicated one and difficult to analyse, as the motion during take-off and landing cannot, so far, be predicted mathematically, and it is only by laborious step-by-step tank-testing that good hull lines can be produced. This result has been arrived at with the "Singapore II," and the hull behaviour on the water is extremely good under all conditions met with in service.

Flight trials have shown that the manœuvrability and controllability of the aircraft are good both in the air and on the water, and that the maintenance qualities are very good, the structure being of very robust design. The machine possesses adequate lateral and longitudinal stability, and its flying qualities are extremely satisfactory.

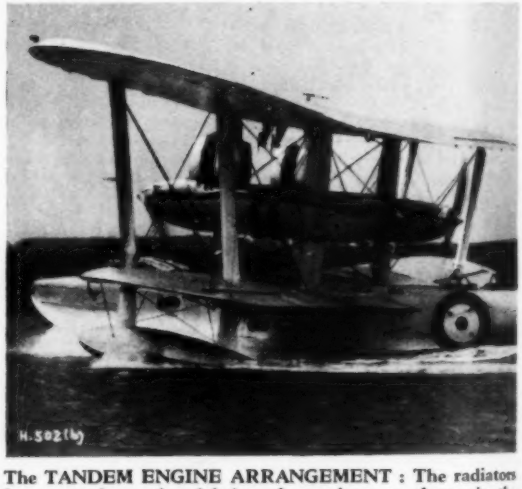
The construction of the aircraft follows along standard practice, duralumin in conjunction with stainless steel fittings being the main materials employed. The engines are mounted in two nacelles of monocoque construction, the general installation proving very good, whilst the engines are readily accessible for repair or maintenance. Special engine lifting gear is provided so that the engines can be removed and replaced whilst the aircraft is at rest on the water.

The hull is arranged on normal lines and is completely equipped for the particular duties for which the aircraft has been designed. The front gunner's cockpit is designed to carry out the alternative duties of mooring, the gun ring being mounted on a slide so as to facilitate mooring operations. The bomber's position is, also, located in this cockpit, which is equipped with the C.S. sight and the bomb dropping and fusing levers.

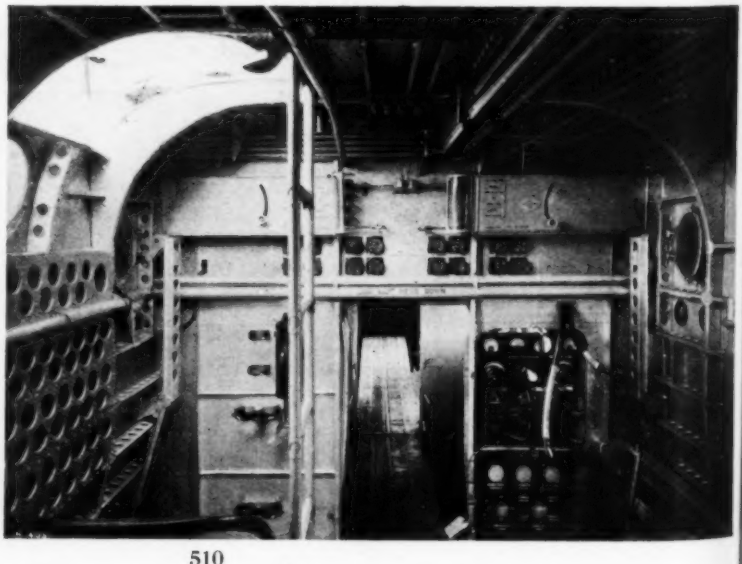
Accommodation is provided between the bow cockpit and the pilot's position for the stowage of the ground anchor, ropes, etc.

The pilots are accommodated in a compartment completely enclosed by a hood and with side-by-side seating. A central gangway is provided between the seats for access to the front cockpit. Full dual control is fitted.

Aft of the pilots is a compartment accommodating the navigator, wireless operator and engineer. Between the spar frames is located the crew's space, which is fitted with folding bunks. Aft of the crew's space is situated the cooking apparatus, utensils, etc., and the two amidship gunners' positions. Provision is arranged for a work bench and vice and the stowage of collapsible dinghies, engineers' ladders, etc. At the extreme aft end of the hull a further gun cockpit is provided which commands an extensive aft field of fire.



The TANDEM ENGINE ARRANGEMENT: The radiators have now been placed below the engines, as shown in the scale drawings on the next page.

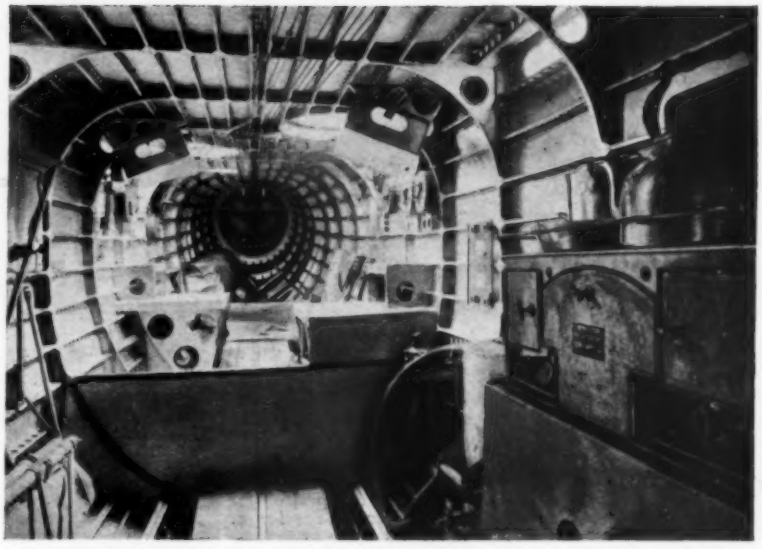


"SINGAPORE II" CALLING: The compartment accommodating navigator, wireless operator and engineer.

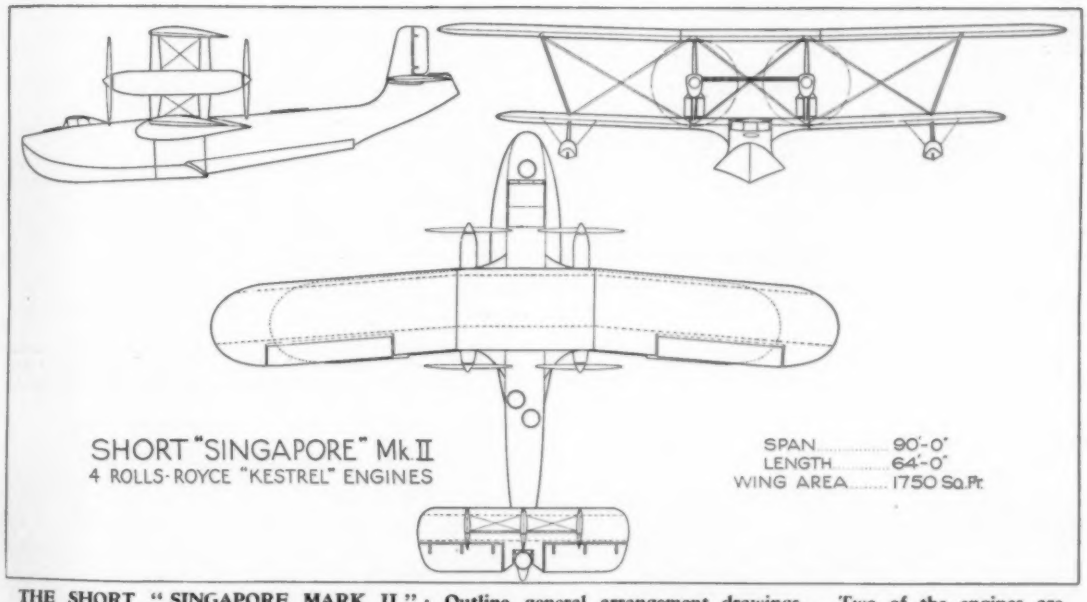
Triple fins and rudders are fitted giving an excellent degree of manœuvrability both in the air and on the water, and, in the latter case, the aircraft can be handled quite easily in fairly heavy winds.

The main fuel for normal range is carried in two tanks built into the wing root of the lower planes. The fuel is pumped to gravity tanks in the upper plane by means of the engine pumps, the feed to the engines being entirely by gravity. For special long-range work a separate overload tank is provided which it fitted on the top of the hull. Any engine can be fed from any tank, and shut-off cocks, operated from the hull by the engineer, are fitted to each of the tanks. Jettison valves are fitted to the main tanks, also under the control of the engineer.

Emergency wireless gear, for use on the water, is provided, the aerial running from the top of the centre fin to a telescopic mast fitted just forward of the upper front spar. Adequate mooring facilities are provided both on the wing tips and the hull.



THE KITCHEN : Aft of this are the two rear gun positions.



THE SHORT "SINGAPORE MARK II": Outline general arrangement drawings. Two of the engines are Rolls-Royce "Kestrel II MS," and two are "Kestrel III MS."

"Tattoo, Circus and Horse Show in One"

THE above title is no exaggeration. It is, moreover, the description given by Lord Hailsham, War Minister, to the unique 50th annual Royal Tournament, staged at Olympia for adding to the funds available for the Naval, Military and Air Force Charities. Opening on May 25, a twice-a-day programme at 2.30 p.m. and 8 p.m. is presented until June 10, after which the opportunity to witness this great entertainment will have passed for another year. Each performance, whilst being intensely thrilling, is an education in itself for old and young alike. There is seen the wonderful military precision with which each item is gone through, the humorous side not being, in several of these, forgotten, each performance concluding with a grand historical display by the 1st Batt. the Royal Scots (The Royal Regiment), a truly moving spectacle. To FLIGHT readers probably the most direct appeal not unnaturally falls to the Physical Training Display given by the Royal Air Force. This item, this year the finest series of exercises ever provided, must be seen to be believed, not only as to novel variations upon previous years, but for absolute precision—the body of men might be in this respect a single man. It should on no account be missed. Novel evolutions are also introduced in the combined horse and motor-cycle display by the Royal Corps of Signals. They form an object lesson of how modern developments have been grafted on to old-time army methods. Mention of these few items gives but a faint idea of the continuous feast presented in the arena, in which part is taken by the R.H.A., the Life Guards, the Army Physical Training Staff, Royal Army Service Corps and the 8th King's Royal Irish Hussars, not forgetting the strenuous work put in during the inter-port field-gun display by the Royal Navy and Royal Marines. During the entire show delightful and appropriate music is provided by the band of the Life Guards. On the opening day the King and Queen occupied the Royal box. Our advice is to book seats early!

AT ST. GERMAIN : A general view showing, in the foreground, the 1915 Farman biplane " cage a poule " which took part in the Meeting.

THE SAINT GERMAIN AVIATION MEETING

THE Annual Saint Germain Aviation Meeting was held on Sunday, May 21 last, in that picturesque aerodrome situated on the border of the forest. It was the first important meeting of the 1933 season in the Paris district, and attracted by the fine weather a large crowd filled the stands and lined the enclosures around the field several rows deep. The meeting was a distinctly International Air Show, in which French, English, German, Swiss and Danish aces participated. The programme was a varied one, and was carried through with a commendable energy and snap. It included the presentation of various types of planes, stunt flying (both by planes and a glider), parachute jumping, mid-air trapeze exercises from planes, etc.

Louis Gaubert, an old-time war pilot, opened the meeting by flying leisurely around the aerodrome in his ancient Farman biplane, known as the " cage a poule " (chicken coop) with Miss Josette Cortez, the Miss Paris of 1933. This machine was constructed in 1915 and is equipped with an 80-h.p. Renault engine. Then, in order to show the marked difference between the aeronautical construction of that date and that of the present time, Miss Paris was again flown around the field in a new-type Morane-Saulnier training plane, 230-h.p. " Salmson " engine, piloted by the well-known constructor-pilot Robert Morane himself, who made a number of steep banked turns, vertical climbs and encircled the field at a high speed.

The exhibition of stunt flying was particularly good. It was begun by the German aviatrice, Miss Liesel Bach, piloting her low-wing Klemm monoplane, 120-h.p. " Falke " engine, who climbed to a high altitude and then gracefully performed numerous barrel rolls and loopings, followed by flying for some time on her back. She would then shut off her engine and make long glides, which greatly attracted the crowd.

A presentation of several tourist and private planes followed. Guy de Chateaudun, who owns a three-place cabin, low-wing Percival " Gull " monoplane, " Gipsy Major " engine, piloted his plane around the field ; George Lebeau, the winner of the 1931 Auvergne Rally, flew a Farman low-wing open cockpit monoplane, type 230 (" Gipsy III " engine) ; and Maurice Finat, in a Caudron biplane, " Phalene " type, also encircled the aerodrome.

An international stunting exhibition followed. The German ace, Gerhard Fiesler, piloting his new biplane, the " Tiger II," was the first to " take off." His machine is equipped with a 420-h.p. " Walter " engine, has biconvex cambered wings, and is specially designed for inverted flying. Fiesler, who has been the leading German aerobatic ace for several years and last season won the international stunting contest at Zurich, gave an exhibition of his remarkable low inverted flying. The French international aces, Marcel Doret, flying his Dewoitine plane (400-h.p. Hispano-Suiza engine), and Michel Detroyat, piloting his Morane-Saulnier machine (300-h.p. Wright-Hispano engine), also performed similar and other feats and showed that they were at their very best. Detroyat has entirely recovered from his accident of last year, and is now as good,

SOME MACHINES AT ST. GERMAIN : Top, left, Guy de Chateaudun's Percival " Gull " ; right, Christopher Clarkson's " Tiger Moth." Bottom, left, Miss Liesel Bach (Germany) in her Klemm ; right, Willy Farner (Switzerland) and his glider.

if not better, as ever. Christopher Clarkson, the well-known English aerobatic pilot, who flew a "Tiger Moth" ("Gipsy Major" engine) gave a novel exhibition of crazy flying. Side-slipping around the field, letting one wheel touch on the ground, then rising a short height, as if bouncing up, and again letting a wheel touch on the ground, Clarkson encircled the aerodrome, having his plane under perfect control all the time. All of his evolutions in the air, barrel rolls, loopings, nose dives, etc., were also done in that smooth continuous manner that has so often been admired in the Royal Air Force Displays. The Danish ace, Arvid Hansen, also gave a good account of himself, executing some interesting aerobatics in the air.

Stunt flying performed by a glider as it came down from a high altitude was also one of the features of the meeting. The glider pilot, Willy Farner, a Swiss Reserve Officer, was towed from le Bourget Airport to Saint Germain by a Comte A.C. plane (95-h.p. "Cirrus" engine) piloted by Max Gugolz, the Commandant of the Zurich-Dubendorf aerodrome. The tow line was 1,450 ft. in length.

When his glider was over the Saint Germain aerodrome, at an altitude of 1,950 metres (6,400 ft.) Farner cast off the tow line, and taking advantage of the various air currents, performed numerous loopings, barrel rolls, etc., during his descent, which lasted 10 min. 15 sec. It was a very graceful exhibition, and was much applauded by the crowd. The glider was designed by Farner himself. Its principal characteristics are as follows:—Wing spread, 11 metres (36 ft. 9 in.); wing surface, 8.8 sq. m. (94 sq. ft. 9 sq. in.); length, 5.3 m. (17 ft. 2 in.); weight, 150 kg. (330 lb.) The wings have a distinct taper toward the tips, with ailerons extending more than one-half of the wing spread.

Several successful descents by the parachutists Romaneschi and Miss Beaucarnot completed the programme of the meeting.

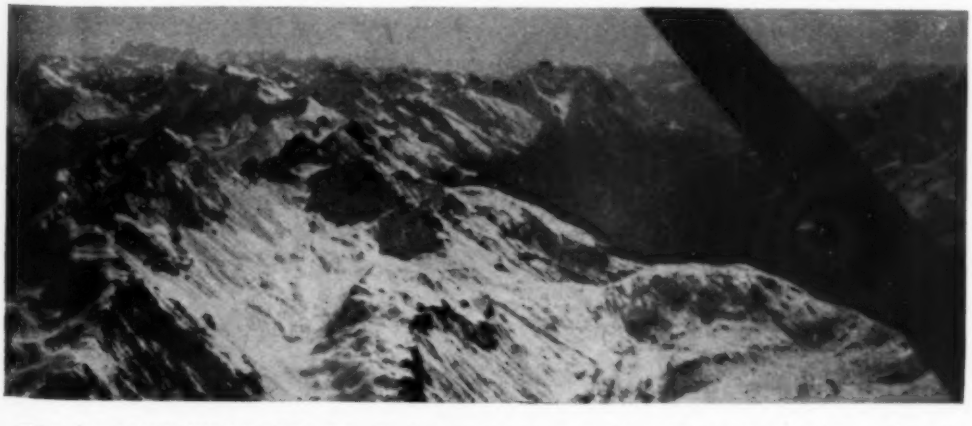
R. C. W.

FURTHER NEWS OF THE ALPINE FLIGHT

INFORMATION about the progress of the Austrian Alpine Flight has been somewhat difficult to get, and, due to complicated formulæ used, the final results are even now not fully authenticated. Last week we took our readers to the start of the Alpine Flight proper. At the end of the first day it was found that only three of the sixteen starters had managed to get through successfully. These were S. Josipovich, flying a Klemm (K 1.32) with an "Argus" 155-h.p. engine; Francis Lombardi, flying a Caproni (C a.100) with a "Colombo" 130-h.p. engine; and Piotr Dudzinski, flying a P.Z.L.19 with a "Gipsy III" 105-h.p. engine. All the rest had either had mishaps or been forced to make long detours on account of the weather and had, in the process, been overtaken by nightfall. The three remaining pilots left early the next morning from Graz and were followed by some of the other pilots who, although not actually still in the race, wished to fly round in a leisurely fashion. About midday it was learned that Dudzinski, the remaining Polish pilot, had had to make a forced landing due to a broken magneto coupling, and had broken his undercarriage in the process.

The evening of the second day was spent at Innsbruck, where a banquet was given by the Automobile Club. It was here pointed out by Prince Kinsky that, with reasonable luck, the first and second prizes would inevitably be won by the two remaining pilots, Josipovich and Lombardi, and he suggested that the third prize might be flown for, on the remaining day of the flight, by the three pilots who had previously been disqualified and five others who had been able to repair various damage they had suffered to their machines, but this prize would have to be divided between those pilots following round the ultimate winners and those who had been left in Vienna and would therefore fly the course in the opposite direction. Our sole remaining British entry, Mr. A. B. Gibbons, in his Klemm ("Pobjoy"), being one of those who had been disqualified for being late on the first day, followed these two pilots from Innsbruck on this the last day. Their course lay over Munich, Salzburg, Linz, Graz, Klagenfurt and so to Vienna. The same system of marking was adhered to, so that points could be piled up by

Prince Kinsky greeting Gibbons and Elliot, in the Pobjoy-Klemm, who were placed third.



THE AUSTRIAN ALPINE FLIGHT: Typical scenery taken by Prince Kinsky from his "Puss Moth" during the contest.

landing at as many of the additional landing grounds as possible. These were usually reasonably good, but were, in many cases, situated in awkward places, and this, coupled with the fact that they were seldom at less than an altitude of 3,000 ft., made both landing and taking off quite tricky. The temptation was, of course, to make too many landings and thereby arrive after the scheduled time, but Gibbons managed this time to avoid his previous mistake, and eventually found himself the winner of the third prize, which he had to share with the Italian, Igino Mencarelli, who had flown his Caproni (Ca. 100) with "Colombo" 130-h.p. engine from Vienna in the reverse direction round the course.

S. Josipovich's winning Argus-Klemm, and two PZL.19 entries which met with misfortune.

Mr. Gibbons would like to bring to the notice of all English pilots, as would also, we feel sure, Col. the Master of Sempill, the extraordinarily kind and attentive way in which the British competitors were looked after. Everyone from the Aero Club's President, Prince Kinsky, down to the ground engineers did their utmost throughout the meeting to help and to give the visitors a pleasant time. We feel certain that all British pilots will join with him in thanking his hosts and in hoping that England will send out a far greater number of machines to represent the country in the second International Austrian Alpine Flight. In conclusion, so impressed was he with the organisation and success of the meeting that he does not think the Austrian President's (President Miklas') words were at all exaggerated when he said that what Prince Kinsky had accomplished by himself was almost superhuman.

RESULTS

Rally Flight to Vienna
1st.—Jerzy Bajan, P.Z.L. 19 (Gipsy Major), 2,539 miles at 105 m.p.h.
2nd.—Piotr Dudzinski, P.Z.L. 19 (Gipsy III), 2,539 miles at 90·3 m.p.h.
3rd.—Corrado Mattioli, Caproni Ca. 125 (Colombo). 2,575 miles.

50-km. Course between Wiener-Neustadt and Aspern
Bajan, P.Z.L. 19 (Gipsy Major), 127·5 m.p.h.

Alpine Flight
1st.—S. Josipovich, Klemm Kl. 32 (Argus), 84 landings, 18,367 marks.
2nd.—Francis Lombardi, Caproni Ca. 100 (Colombo), 67 landings, 11,765 marks.

Third Day Flight for Third Prize divided between :—
A. B. Gibbons, Klemm L 25 (Pobjoy).
Igino Mencarelli, Caproni Ca. 100 (Colombo).

THE DEUTSCH CUP RACE

Won by France at 200 M.P.H.

SCHEDULED to start from 9 a.m. onwards on Sunday, May 28, the race for the new Deutsch Cup was postponed until May 29. At 9 a.m. on Sunday there were heavy rain squalls, and the start was postponed until 10 a.m. At 10 the weather was still uncertain, and the meteorological reports were far from encouraging. Another postponement until 11 o'clock. And finally the announcement that the race was postponed until next day.

On Monday, May 29, the weather conditions had improved, and the race was flown. Details have not reached us as we go to press with this issue of FLIGHT, but the brief announcement of the result is as follows:—1st, Detré, on Potez 53 ("Renault" engine). Time for the 2,000 km. (1,245 miles), 6 hr. 11 min. 45 sec. Average speed, 323 km./hr. (200 m.p.h.). 2nd, Delmotte, on "Caudron" ("Renault" engine). Time 6 hr. 52 min. 6 sec. Speed, 291 km./hr. (181 m.p.h.). 3rd, Comper, on Comper "Swift" ("Gipsy Major"). Time, 8 hr. 46 min. 23 sec. Speed, 228 km./hr. (141.5 m.p.h.).

Of the seven competitors which passed the qualifying trials some time ago, and details of which are given in the accompanying table, six started. One of the French machines, a Farman (Renault) piloted by Arnoux, failed to get away. Only the three competitors mentioned finished the course.

We hope to publish a detailed account of the race next week. In the meantime it is quite obvious that something must have happened to "Nick" Comper. In last year's King's Cup Race, Flt. L' Fielden, who was flying the same machine, which had been entered by H.R.H. the Prince of Wales, averaged 155.75 m.p.h. That was with a "Gipsy III" engine. The machine had been fitted for the *Coupe Deutsch* with a "boosted" "Gipsy Major," and should have been capable of approximately 180 m.p.h.

The winning machine, flown by Detré, was described and illustrated in our issue of May 18. It has a wing area of 77.5 sq. ft., and is fitted with a "Potez" engine developing 310 b.h.p. Over a 100-km. course the machine established a new world's record for light planes by averaging 207.4 m.p.h. Curiously enough, the value of the Everling "High-speed Figure" works out at the surprisingly low figure of 15.1. This is, of course, because of the high ratio of power to wing area (4 h.p. per sq. ft. of wing area). Shell Aviation Spirit was used by the winner.

COMPETITORS IN DEUTSCH CUP

Aeroplane	*Racing No.*	2	3	6	7	8	10	12
	Aeroplane ..	Comper Swift	Farman	Caudron	Farman	Caudron	Potez	Potez
	Engine ..	Gipsy Major	Farman	Renault	Renault	Regnier	Potez	Potez
	Pilot ..	Comper	Salel	Delmotte	Arnoux	Vallot	Detre	Lemoine
	Wing span, ft.	24·3	25·9	22·3	19·6	22·3	21·8	21·8
	Wing area, sq. ft.	90·4	102	75·3	64·6	75·3	77·5	77·5
	Gross wt., lb.	1,400	2,490	1,530	1,210	1,680	1,980	1,980
	Wing loading, lb./sq. ft.	15·5	24·4	20·3	18·7	22·3	25·6	25·6
	Power loading, lb./h.p.	10	6·16	9·02	7·04	7·7	6·38	6·38
	H.p./sq. ft.	1·54	3·91	2·25	2·64	2·92	4·0	4·0
Engine	*No. of cylinders*	4	12	4	4	6	9	9
	Arrangement	I	IV	I	I	I	R	R
	Cooling ..	A	W	A	A	A	A	A
	Bore, mm.	118	90·3	120	120	114	98	98
	Stroke, mm.	140	100	140	140	130	117	117
	Capacity, litres	6·12	8·0	6·33	6·33	8·0	8·0	8·0
	Aspiration ..	N	S	N	N	N	S	S
	Weight, lb. ..	308	572	297	297	453	374	374
	Power, b.h.p.	140	400	170	170	220	310	310
	Speed, r.p.m.	2,400	3,700	2,500	2,500	2,450	2,500	2,500

A = Air-cooled; W = Water-cooled; I = Inverted in-line; IV = Inverted vee; R = Radial; N = Naturally aspirated; S = Supercharged.

A Royal King's Cup Entry

H.R.H. PRINCE GEORGE has entered a "Gull" (Napier "Javelin") for the King's Cup Race, which will be flown from Hatfield on July 8. This machine will be flown by Flt. Lt. J. Armour. A full list of entries, together with a sketch map of the course, was published in our issue for May 25.

From the Clubs

"BATHING" AT READING

NO scientific discovery, momentous though many have been of recent years, has yet provided a means whereby those holding outdoor functions in England may do so with impunity without regard to the weather. Many people just insure their "gate," and then, it is maliciously said, often welcome a downpour, but people like the Reading Aero Club study their visitors too much for that.

Sunday last they held their annual club "At Home," and, being a progressive club, they have long realised that functions of this kind please people far better if they are primarily garden parties, where the ladies can display on their backs the proceeds of their husbands' earnings. They feel that flying should not form the chief attraction of these afternoons, because people connected with flying clubs are satiated with aerobatics and what are usually called "demonstrations." In this contention they are right, for it is the social quality of the function which attracts people.

Last year the weather was perfect and the lawn was crowded out. People almost fought for chairs and sat on each other's laps; so this year the Committee determined to provide sufficient "cane-backeds or wickers" . . . and they did! Unfortunately, setting out the last, of a hurriedly ordered, additional batch, complete with coloured cushions, was the signal for the rain, which drenched those chairs and all the visitors until well past 6.0 p.m.

It really was awfully bad luck on the Club's Committee, because they had worked hard to make the afternoon a success, and it was hateful to see a failure caused by circumstances over which they had no control.

However, lots of people came, the tea tent was crammed all the time, and those who braved the rain or who were lucky enough to secure seats under cover on the Club verandah, saw a certain amount of flying. To start with, there was a demonstration of the Miles "Hawk," a new aeroplane now in production in the Phillips & Powis shops on the aerodrome. We have already described the machine, and, as every one knows, it is most pleasant to fly. During the afternoon Capt. C. W. Snook, of Air Taxis, from Western Australia, who is over here to purchase British aeroplanes, tried the "Hawk," and thought it was an exceptionally good aircraft, particularly in view of its low horse-power. Great advance has been made with the production of this type, and the shops are now well laid out with jigs and wood-working machinery. Close inspection shows that it is very ruggedly constructed, and that besides being amply strong it should also stand up to the wear and tear of hard use in any part of the world.

Mrs. Shelmerdine (wife of the Director of Civil Aviation) presents the Northesk Cup to Miss Giles, the winner of the Ladies' Race at Reading on May 27. Just behind is Mrs. Powis, whose husband is Managing Director of the Aerodrome, and Mr. E. C. Brown, who worked the microphone so successfully during the afternoon.

The prime event of the afternoon was the Ladies' Race, but unfortunately the rain kept away several visitors, with the result that there were only two entries. These were Mrs. Battye and Miss Giles, both of whom were flying "Moths" with "Gipsy I" engines. Miss Battye's machine had fabric strips on the aileron and elevator gaps, so she had to give Miss Giles 4 sec. start. The course was roughly a triangular one, around prominent land marks not far from the aerodrome. Mrs. Battye took the lead shortly after the start, and then maintained her position until near the finish. Here, however, she overlooked the last turning point and was in consequence disqualified, leaving Miss Giles as the winner, at an average speed of 95 m.p.h.

Despite the weather over 20 aircraft paid the club a visit during the afternoon, among them being the demonstration "Dragon" (2 "Gipsy Majors") of Brian Lewis, Ltd., which was shown off by Flt. Lt. C. Clarkson, after the weather had cleared a little, which it did completely, of course, as soon as the party was over!

The rain made things very unpleasant during the Reading Aero Club's "At Home," but nevertheless many aeroplanes visited the aerodrome during the afternoon. Here are some of them in front of the clubhouse.

LONDON AEROPLANE CLUB

During the week 70 hr. were flown on club machines, Mr. J. Marling finishing his tests for "A" licence. On Sunday, May 28, a Landing Competition was held and won by Mr. W. R. Oliver, who gained 275 marks out of a possible 100. Mr. Nigel Tangye's place has been filled by Flt. Lt. Rimmer. Among new members, the Club are pleased to welcome Mr. Gerhard Decker.

CINQUE PORTS FLYING CLUB

Flying times for the week were up to the average. Mr. E. J. Boyle made a successful first solo after only 6 hr. dual. Messrs. J. R. Harris and J. W. W. Humdall both passed their "A" licence tests and are now having advanced dual. Messrs. Phillip Marriage and John Searle returned to the Club after a long absence, and after a test circuit put in solo. An interesting event during the week

was the launching into the air of Mr. Chater's Avro 504. Mr. Chater demonstrated his enthusiasm by proceeding to build a machine as soon as he had taken his "A" licence. Unable to purchase the whole lot at once, he spread his constructive activities over two years, and did almost all the work himself. His perseverance, hampered by set-backs and much "leg pulling," has been rewarded, for the machine, powered with a "Lucifer" engine of 140 h.p., went through its tests and flies extremely well. The official closing day of the Club has been changed from Tuesday to Monday. The provisional date for the Club flying meeting has been fixed for Saturday, July 22.

SURREY AERO CLUB

The improved weather has drawn many new members to the Club during the past week. Dr. Nicholson and Mr. Gowan are taking instruction for "A" licences. The *Daily Express* flying competition has drawn quite a number of entries to Gatwick, and it is hoped one of them will meet with success. Mrs. B. S. MacDonald is back at the Club from Iraq and taking an extensive course in flying and ground training. Another ground-engineering pupil has joined the Redwing School of Aeronautical Engineering, which course is very popular. The aerodrome is becoming very popular with the owners, trainers, and jockeys who attend the Gatwick Races and others; the aerodrome car is always available to take them from machine to racecourse. Visiting aircraft during the week included Messrs. Davenport, Page and R. Malcolm from Heston, Mr. and Miss Tyzack from Northampton, Messrs. George Lowdell and Barr from Brooklands, and Lt. R. Bentley. The last dance was very successful, the numbers may not have been great but the enjoyment was good. The horse riding is proving extremely popular, and Mr. Payne, the Chief Instructor, takes a little equestrian tuition every morning before starting his aerial duties.

GRAVESEND AVIATION, LTD.

Between the storms of the last few days the Club machines have been fairly busy, Mr. P. Dobree successfully completing his first solo. An informal dance will be held on Whit Monday, June 5, at which guests from other clubs will be welcome.

MAIDSTONE AERO CLUB

Maidstone Flying School are still maintaining record figures and the flow of new pupils continues. Mrs. I. Goldspink did her first solo during the week. The *Kent Messenger* representative, who is learning to fly at Maidstone, is writing a series of articles which are proving of great interest in the county. On Sunday, June 4, the monthly "At Home" will be held, and all will be welcome. Dancing on Sunday evenings from 7.30 is being continued.

PORTSMOUTH AERO CLUB

The opening ceremony of the Club, arranged for Saturday, May 27, had to be postponed owing to the heavy rain. As it was impossible to warn guests, an informal "At Home" was held, at which there were nearly 300 guests. Pleasure flights were given in the Westland "Wessex," and the Airspeed "Courier" was demonstrated during the afternoon. By courtesy of the directors of the companies concerned, parties were shown over the Portsmouth, Southsea and Isle of Wight hangar. The Portsmouth Aero Club premises are to be officially opened at a later date by the Lord Mayor.

AT SHERBURN-IN-ELMET: Mr. H. Hey, on the left, is not only the owner of Sherburn Aerodrome, but is also the presiding genius who has been largely responsible for the development there and for the spirit of welcome which has become so well known to all visiting pilots. On his left is Miss Lillian Murphy, who made her first flight over 20 years ago. On her left is a friend, also well known at Sherburn, Mr. C. Goodwin. (FLIGHT *Photo.*)

NORTHAMPTONSHIRE AERO CLUB

On Sunday, May 21, Lord Willoughby de Broke gave a tea party to the Chamber of Commerce and local Rotary Clubs of Northampton and Kettering, which was well attended. A short flying display was given by Club members, followed by tea and as many joy rides as could be arranged in the time. The display consisted of a fly-past by various machines, a display of aerobatics by the instructor, balloon bursting, crazy flying and formation flying. The Chairman of the Leicester Club, Mr. Lindsay Everard, M.P., came over in his "Dragon Moth" with a party of friends, escorted by his "Gipsy III Moth." Other arrivals by air were Capt. H. D. Davis, Flt. Lt. N. Comper, and Messrs. J. Walker, K. Whitcombe, Brian Allen, Ian Barr and Henry Deterding. Lord Willoughby

AT GATWICK: Some of the "Redwings" of the Surrey Aero Club. (FLIGHT *Photo.*)

de Broke flew over from his own aerodrome at Kineton in his "Puss Moth" to welcome the guests. Visiting pilots during the week included Lord Borodale, Messrs. Norman Edgar and Cubitt in their "Puss Moth" from Bristol, Mr. W. Ledlie on the Junker from Brooklands, and Mr. Barr on the "Martlet." Miss Doreen Tyzack arrived back from Scarborough with her sister, and has been having advanced dual. New pupils include Mrs. Donithorne and Mr. Colman. The weekly lecture was given on Wednesday by the instructor, on navigation and instruments, which was well attended.

SKEGNESS AND EAST LINCOLNSHIRE AERO CLUB

Preparations for the Skegness Air Display are now complete, and it is hoped that all pilots who intend to turn up on Saturday, June 3, will notify the Hon. Sec. as soon as possible. All pilots will be the guests of the Club for lunch and tea on Sunday, June 4. Beside the race for the Lincolnshire Air Trophy over a course of about 100 miles, there will be a short pylon race round a circuit of roughly 4 miles, also a surprise event for which entries can be received up to the start of the race. For visitors who stay over Monday, there has been arranged a grand all-in wrestling and boxing display, which will include a contest between Bert Assirati, champion of the world, and Al Hamilton, champion of Canada. Flying has been fairly brisk, including one "A" licence, Mr. Townsend, and two first soloists, Messrs. Munks and Henshaw. The landing competition was won by Mr. Langdon, who has since left for India. Taxi trips were undertaken to London, Birmingham and Nottingham, each case in a "Puss Moth." Two machines visited Brooklands for the Guild of Air Pilots' display, two passengers being taken in the "Puss Moth" and Mr. Dawson flying a Club "Moth."

BENGAL FLYING CLUB

During April first solos were carried out by Mrs. D. W. Dougall and Mr. J. Jehangir; Mr. J. W. Ross started dual instruction and Mr. J. Sen completed tests for his "A" licence. Cross-country flights were done by Mr. T. M. Dow from Dum Dum to Jessore and return, and Messrs. R. Pal. Choudhuri and K. N. Chowdhury to Bolpur and return. The Club instructor returned from Rangoon on April 1, after taking Mr. Allen there, and on April 18 he and Mr. Raha went in search of the wreckage of Capt. Robiano's machine which had been reported floating near the mouth of the Ganges. Capt. Robiano arrived at Dum Dum in his "Gipsy" engined "Breda" on April 14. He departed the same evening for Australia, since when nothing else has been heard of him. On April 4 Mdlle. Hilz arrived after flying nonstop from Karachi, and on the following day departed for Bankok. Flt. Lt. McIntyre came in one day from Purnea for spares and to get some films developed at India Air Survey & Transport, Ltd. Mr. Vintcent arrived during the month in a "Fox Moth" with two passengers. Flying times for April totalled 40 hr. 45 min. dual and 64 hr. solo, the total membership being 336.

THE DE HAVILLAND SCHOOL OF FLYING

The flying time for the past week was the gratifying figure of 197 hr. 25 min. The R.A.F. Reserve Flying Club held a committee meeting on May 25. F/O. R. E. G. Brittain was elected chairman and Sqd. Ldr. B. C. Rice, M.C., vice-chairman. The Hon. Secretary is F/O. P. E. Underwood, to whom all inquiries should be addressed at Hatfield. As the membership has now reached 100, the entrance fee will be £2 and the annual subscription £4, which can be paid half-yearly. It is pointed out that, whilst the Club is primarily for officers of the R.A.F. Reserve, past and present officers of all the flying services are eligible. The maximum flying rate is £1 per hour. Miss Camilla Horn, the German film star of the British picture "Love Nest," came to Hatfield during the week to watch the activities of the Stage and Screen Club machine. Col. Hamilton Gault, M.P., flew to Taunton for the week-end on his machine G-AAGA. The swimming pool is nearing completion, and the artesian well is now 240 ft. deep towards the required 350 ft. Sir Piers Mostyn visited Hatfield on May 24 in "Gipsy Moth" G-ABBM, in which machine he has made six annual trips to Kenya and return.

THE AIRSPEED "COURIER" IN ITS NEW HOME

AIRSPEED, LTD., have now thoroughly settled down in their new factory at Portsmouth, and production is well under way. At the present time one "Ferry" is being constructed to the order of Mr. Sword, of Midland and Scottish Air Ferries, and another will shortly be laid down "on spec." It is no small thing to move a factory like this without dislocating the whole production, but Airspeed have shown that the difficulties are not insuperable.

The new factory is very conveniently situated on the edge of the Portsmouth Airport, adjacent to the main road, in a position which allows of easy access from either, and should be a far better proposition than the original works at York. During a recent visit we accepted a proferred opportunity of trying out the "Courier." The machine we flew was that which Sir Alan Cobham and Sqd. Ldr. Helmore are intending to fly non-stop to Australia, and which was not, therefore, fitted up for passengers. On the contrary, the cockpit was cluttered up with fuel tanks and special gadgets, designed to help on such a flight. We could thus form but little opinion of the comfort which will eventually be provided for the six passengers which the production "Courier" will accommodate.

However, from a flying, and therefore the pilot's, point of view, the "Courier" is one of the most satisfying aircraft in its class, which it has been our pleasure to try. The first point, which strikes one most forcibly as having received real and understanding consideration, is the view. It is really excellent and is only excelled on an aircraft wherein the nose engine is dispensed with. A large proportion of this wide and comforting view is provided by having low windows, not only in front of the pilot, but also at each side, so that despite the low wing one does not feel shut in or restricted in any way.

The controls are well harmonised and are approximately of the same weight throughout. They are positive and effective, and far more "just right" than is usually found in this class of aircraft. It must be borne in mind that this is the first, and therefore, to some extent, the experimental machine of the type; but notwithstanding this, the whole machine is more nearly right than is often the case. Laterally, perhaps, a little more stability is desirable, especially on long journeys, for it is less tiring to fly for hours on end with a machine which will maintain its attitude in all planes without necessitating constant resource to the controls. The ailerons are effective and belie the feeling of "largeness" which one gets on first entering the machine, but are nevertheless light and hardly above the light aircraft class. The elevator is, perhaps, a little more responsive than the ailerons, but as the control required for pitching is of approximately the same weight as that for lateral control, there is none of that feeling that the control column is working in a fore and aft groove. Directionally the "Courier" is more stable, but here again a slight improvement could possibly be brought about by making the rudder slightly heavier, either by gearing or by decreasing the balance. As it is at present, it is rather lighter than the other controls, and, due to the flying position which necessitates the pilot keeping his feet in the pedal-shoes all the time, it is probable that many pilots would find themselves wandering away to one side or other of their course. The retractable undercarriage makes a very great difference in the speed of the "Courier," which is only to be expected as when it is in the "ready-use" position the fairings definitely act as air brakes. It is very easy to raise or lower, and on this particular machine a Klaxon horn has been fitted in circuit as a warning device, which gives its raucous howl if the throttle is closed before the undercarriage is right down. According to the makers, and to the air-speed indicator as fitted, the "Courier" certainly reaches an easy 140 m.p.h. at 1,900 r.p.m., and 160 m.p.h. at 2,100 r.p.m., and thereby proves its efficiency aerodynamically; this is particularly creditable when one remembers that the engine, an Armstrong Siddeley "Lynx," gives only 240 h.p. There is little doubt that the Townend ring helps materially. Taken all round, the "Courier" is a very good answer to the challenge of other countries, and is the first machine which we have had for many years, carrying six passengers, two pilots and their luggage, at a cruising speed of 140 m.p.h. on 240 h.p. Messrs. Norway and Tiltman, who were responsible for its production, are to be congratulated.

Air Transport

THE SPARTAN "HESTON—COWES" AIR LINE

AS we have already mentioned, the Spartan Air Line which runs between Heston and Cowes is now running two services each way every day, including Sundays.

We recently tried out this line in connection with a visit we made to Saunders-Roe, who, of course, house under the same roof both their own aircraft factory, which is primarily devoted to the production of amphibians, and that of Spartan Aircraft.

Our journey down was particularly comfortable in every way. Starting from Airways' Terminus, at Victoria Station in London, where Imperial Airways act as general agents for the Spartan line, we were treated with every consideration and received exactly the same attention as if we were travelling, say, to Capetown, by Imperial Airways, the only difference being that we were able to dispense with the passport rigmarole. This arrangement with Imperial Airways is an excellent one from the passengers' point of view, as it enables him to start his journey in comfort right from the centre of London, and it is comfort which people not only want, but are entitled to, when travelling by air. Many air line operators have put speed before comfort, with the result that they miss the main public and only get either the enthusiastic people, who travel amid din and smell because they like flying, or the super-rushed business man who has to get there at any cost. People who can afford to travel by any method they choose will undoubtedly choose the air, provided they are given comfort; this has been more than amply proven by the rise there has been in Imperial Airways traffic since the Handley Page 42's were put into service. Speed is, of course, necessary where the air line is in direct competition with fast rail traffic, but no air line should ever be run in competition with existing means of transport if comfort has to be sacrificed to make it pay.

This view shows the comfortable seats and the wide, deep, windows of the Spartan "Cruiser." The noise of the "Gipsy" engines is greatly deadened by a bulkhead between this cabin and the pilot's cockpit. A description of the Spartan "Cruiser," as supplied for use on the Iraq service, was published in "Flight" for February 23 last.

The line to Cowes is an admirable example of a suitable location for a line. The rail journey to Southampton or Portsmouth can be reasonably comfortable, and is certainly fast, but at the end of it one has the boat journey across to the Isle of Wight to contend with. The traffic between the Island and London is quite considerable, even after allowing for the seasonal fluctuations, and as Spartans are setting out with the idea of providing a service which is both comfortable and fast, they should surely succeed. In any case, their efforts will be well spent in providing a fine advertisement for the Spartan "Cruiser," the type of aircraft which they are using on the line.

Our journey from Victoria was made in a luxurious Daimler car at a fast but not hectic pace. At Heston the uniformed airport attendants took charge of our luggage and we were conducted out to the "Cruiser," whose "Gipsy Major" engines were already ticking-over. Mr. Lynch-Blosse is the chief pilot of the line, and we were fortunate enough not only to be flown down by him but also to be accompanied by Mr. W. D. Roberts, the Managing Director. During the flight the desire to provide comfort was again obvious and bumps and disturbed air were avoided by flying high. This had the double advantage of letting one see the country—particularly beautiful in this part of England—and of ensuring a smooth journey.

At Cowes we found a pleasant waiting room, most interestingly decorated with photographs taken by Mr. Lynch-Blosse during his survey work in many parts of the world, and a motor car awaiting us; thus had we been in a hurry we should have been able to leave at once for Cowes itself, which is situated barely one and a-half miles from the aerodrome.

Those who write to Spartan Air Line's agents, mentioning FLIGHT, will be sent a descriptive folder giving many more details of the service than it is possible to get into a short article like this. The agents are:—Imperial Airways, Ltd., Victoria Station, London, S.W.1; Airwork, Ltd., Heston Airport; and the Fountain Garage, Ltd., Cowes, Isle of Wight.

The company also have machines available for taxi work, and these are ready to take passengers anywhere in the British Isles or on the Continent at the shortest notice. The "Cruiser" and the three-seater Spartan "Coupé" are used for this work.

SHANKLIN-RYDE-PORTSMOUTH-SHOREHAM

SOON now it will be possible to journey between almost all the major towns in Great Britain by air. Already there are services running which are finding they have more than sufficient work to cope with, and this is particularly so where a stretch of water divides two places, making the train journey long and tedious, if the place in question is one of those where the water is an estuary, or impossible where the water divides an island from the mainland. This last is the position for which Portsmouth, Southsea & Isle of Wight Aviation, Ltd., are catering.

Their ferry service runs between Shanklin, Ryde, Portsmouth and Shoreham. At the present time, that is, from June 1, the service between Portsmouth and Ryde will be run every half hour and there will be eight machines each way daily to Shanklin, the Shoreham extension being served with three machines each way.

A bus from Ryde Pier runs right past the aerodrome at fairly frequent intervals, but we understand that there will be a motor car to run passengers down to the town as soon as there is a demand for it. At the Portsmouth end the Corporation buses run in connection with the

JUNKERS FOR UNION AIRWAYS: On May 24 Maj. Miller and Capt. Fry left Dessau for South Africa in two Junkers Type W.34 monoplanes (Pratt and Whitney "Hornet") for use on the South African Union Airways. They reached Cairo in 15 hr., and hoped to arrive at Port Elizabeth by last Sunday. Our illustration shows the crews (Capt. Fry on extreme left and Maj. Miller on extreme right) of both machines before their departure.

service—it would seem an obvious step for the Southern Railway to have a siding which could be used for aerodrome passengers, as their main line runs along the side of the aerodrome; they could then book passengers right through to the Island from Victoria. Quite a number of aircraft are used on these ferries, according to the number of passengers. There is a Westland "Wessex," a "Monospar" and several open light aircraft like the "Moth," Spartan and Klemm (the latter being a three-seater).

Quite apart from the time saved by flying from Portsmouth to the Island, it is well worth doing solely for the pleasure of the trip. The view is most interesting, as there is always some shipping at Spithead or in the Solent, and on a clear day one can see almost the whole of the Island from Seaview to the Needles.

Now that the electrified Southern Railway line is running to London from Shoreham so that the journey only takes 1 hr., it is rather impressive to think that one can travel from Ryde to Shoreham, see someone on business, and still be in London inside 2 hr.

Apart from the regular ferry services, P.S. & I.O.W.A. also cater for the holiday traffic by the provision of aircraft ready to make sightseeing flights or taxi trips, and really delightful journeys can be made around the Isle of Wight or over Southsea.

French Air Lines Amalgamate

THE four principal French Air Lines, the Air Union, the Cidna, the Air-Orient, and the Aero-Postale have submitted a proposal to form themselves into a single company, which is receiving the favourable attention of the Air Minister. Details of the fusion will be worked out by a committee presided over by the Air Minister, and it is possible that a new Trans-Sahara service will be started. The principle motive of the fusion is economy, which will benefit the State in the long run, as she has suffered most by losses.

Australian Air Route

THE Imperial Airways machine *Astrea* left Croydon on Monday, May 29, for Australia. Piloted by Capt. Prendergast, and with Maj. Brackley as passenger, the machine will make the final survey trip for the route to Australia.

Flying on Scotland's West Coast

A COMPANY has recently been formed, designated Clyde Flying Boats, Ltd., which will be carrying out joy-riding, charter work, etc., from Balloch on Loch Lomond. At the present time the company owns a Saunders-Roe "Cutty Sark" and will work in conjunction with British Flying Boats, Ltd. The company is owned by Mr. T. W. B. Guthrie, a member of the Scottish Flying Club, and son of the late Sir James Guthrie. In September a cruise will be made in company with boats of the latter company under whose general direction the two companies will operate, around Scotland, and it is hoped, including the Orkneys and Shetlands.

Speeding-up the Heinkel

BY making various aerodynamic improvements, the exact nature of which is not stated, the Heinkel works of Warnemuende, Germany, have been able to achieve a considerable speed increase on the He.70 mailplane. The original maximum speed was 362 km./h. (225 m.p.h.). This was increased in recent tests officially observed by the D.V.L., to 377 km./h. (234.25 m.p.h.). The machine was flown by Capt. Untucht, of the Deutsche Luft Hansa. The He.70, it will be remembered, is fitted with a B.M.W. VI engine of 640 b.h.p.

S S S S S

An Aerial Whitsun Holiday

MR. LINDSAY EVERARD, M.P. for the Melton division of Leicestershire, has organised a party to visit Germany by air for Whitsun. Visits will be paid to the Rhineland and the Junker works at Dessau, and they will be able to look down on the pocket battleships in the Kiel Canal. Capt. Goering, the German Air Minister, will welcome the party officially at a banquet given by the German Aero Club. The party will include Lord Willoughby de Broke, Lord Amherst, Mr. "Bobby Perkins," M.P., Col. Hamilton Gault, M.P., Mr. Leslie Runciman, Mr. Gordon Selfridge, Jun., and Air Vice-Marshal Borton. They will leave Heston on Friday, June 2.

Memorial to Lord Knebworth

THE family of the late Lord Knebworth have decided that the most fitting memorial to his memory would be a fund devoted to the welfare of the boys whom he used to meet at the Camp at Ingham. Lord Knebworth was Chairman of the Seaside Camps and Settlements Association, and had the interests of these boys very much at heart. Subscriptions for this object may be sent to Maj. E. M. Lafone, Cavalry Club, Piccadilly, or to Viscount Knebworth Memorial Endowment Fund, Lloyd's Bank (Cox & Co.'s Branch), G. Department, Pall Mall.

Anglo-Austrian Air Convention

A CONVENTION respecting air navigation has been concluded between His Majesty, in respect of the United Kingdom, and the Federal President of the Austrian Republic. As a result no special prior permission will be necessary in future for pilots of civil aircraft registered in the United Kingdom who desire to carry out flights to or across Austria, provided that the conditions set forth in the Convention are not contravened.

A Brooklands Echo

WE are informed that Mr. L. Lipton, who was mentioned as having won the Interception Race, during the Second Civil Air Display at Brooklands on Saturday, May 20, is not, as stated, in the employ of Birkett Air Service. Mr. Lipton does not possess a "B" pilot's licence, and so could not, of course, be employed on such work. He is a member of the London Aeroplane Club.

Airport News

CROYDON

ON Wednesday, May 24, Sean O'Kelly, Vice-President of the Executive Council of the Irish Free State, arrived by Air Union aeroplane from Paris, where he had been attending the St. Vincent de Paul centenary celebrations. He left immediately by train and boat for Dublin.

Sir John Simon, who was travelling home by air from Geneva to attend a Cabinet meeting, left Geneva shortly after 7 a.m. in an R.A.F. Fairey III.F. piloted by Sqd. Ldr. Whitford, but owing to exceptionally bad weather over the Alps they were forced to return to Geneva. They left later, however, and made the journey to Croydon via Paris in good time. When I asked Sir John what his impressions were of flying through thunderstorms and poor visibility over the Alps, he replied in his typical true sportsmanlike manner, "Oh, it was nothing—just one of those occasions when the weather was not quite good enough for us to get through." Sir John was met at the Airport by Lady Simon.

By travelling at an average speed of 180 m.p.h. on Thursday afternoon and completing the journey from Croydon to Le Bourget in 1 hr. 16 min., the new French air liner *Golden Clipper* (described in FLIGHT for May 18) set up a new record for the London-Paris service. It is intended to replace the "Golden Ray" air liners with these new machines, which have brought the centre of Paris within three hours of Piccadilly Circus. The machine, which carried eight passengers on this occasion, was piloted by M. Lollhe. On hearing of the record, Col. the Master of Sempill sent the following telegram to M. Louis Brequet:—"Congratulations on having brought Paris and London still closer together by the flight of 76 min. made by your *Golden Clipper* fitted with British designed engines."

On Sunday, May 28, Herr Neusel, the German boxer, who was to meet McCorkindale, the South African boxer, arrived at Croydon by air from Paris.

England's greatest musician, Sir Edward Elgar, O.M., Master of the King's Musick, made his first flight in an aeroplane on Sunday afternoon, when he flew from Croydon to Paris in the Imperial Airways air liner *Horatius*. He is 75 years of age. Sir Edward was accompanied to the Airport by his daughter, Mrs. L. H. Blake, and a number of friends, whom he presented with autographed records of his famous Concerto in B minor, which he wrote a number of years ago and dedicated to the late Caruso. Sir Edward will conduct the rendering of his Concerto by Yehudi Menuhin before members of the French Government at a concert to be held at the Salle Pleyel. Mrs. Blake said that her father had been looking forward to the flight with enthusiasm, and if he liked it he would probably return by air also. [Perhaps Sir Edward will compose a new "air" dedicated to his aerial voyage.—ED.]

On Tuesday, May 23, Lord Cranworth flew by D.L.H. to Berlin, and on Friday, May 26, Sir Harry Brittain, who is a director of D. Napier & Son, flew to Berlin on the 9.20 a.m. aeroplane. He proceeded from there by air the following day to Vienna.

On Monday, May 29, one of the Atalanta air liners, the *Astræa* (G-ABTL,) left on a survey trip of the proposed Empire Air Route to Australia. The machine, piloted by Capt. Prendergast, left Croydon at 10 a.m., and was reported to have reached Lyon at 2.5 p.m.

Prince Bibesco, the President of the Internationale Federation Aeronautique, arrived on Monday afternoon in the *Golden Clipper* from Paris.

Air Taxis, Ltd., carried out a considerable amount of pleasure trips during the week, and are now operating a "Puss Moth" in addition to the "Hawk Moth." In addition to the pleasure flying, four special charters were arranged by the Croydon office, which were carried out from Stag Lane.

The total number of passengers for the week was 1,727; freight, 72 tons 7 cwt. HORATIUS.

From Heston

SIX new pupils started instruction at the Airwork School last week. On Thursday Air Vice Marshal Borton took delivery of the first production Napier "Gull." There were 24 Customs clearances last week and the total number to date is 53 per cent. higher than the corresponding total in 1932. Mr. John Crammond, Mr. Richard Ince and Mr. Walter Westhead left in their aeroplanes for Vienna, and they are finishing their holiday at the Vecta Meeting on Whit Monday. Mr. Westhead has just had a wireless transmitting-receiving set fitted in his "Cadet," and this is the first time he has had it in operation. Mr. and Mrs. Leslie Runciman also left for Vienna on Friday. Spartan Air Lines are running two daily services now and are carrying quite a number of passengers, and up to date, as most of their passengers have not been flying people, they are indeed demonstrating to the general public the usefulness of commercial air lines. On Saturday Mr. Green brought down the first Avro Club "Cadet" with folding wings to demonstrate it to its owner, Mr. Constant. This machine is actually on its way to Martlesham for its final tests. B.A.N. Co. have had quite a busy week and have flown a distance of 3,693 miles. One interesting flight was made to Hucknall testing a short-wave wireless receiver on which messages broadcast on 5 metres were clearly heard 150 miles away.

Bristol Air Pageant

THERE are indications that the Bristol Air Pageant on June 17 will attract one of the largest crowds yet seen at the Airport. The whole of 501 (City of Bristol) (Bomber) Squadron will take part in the programme by kind permission of the Air Council, and many manufacturers have already promised to send their latest types for demonstration. Entries for the S.B.A.C. are already being received from both private owners and clubs. Additional entry forms can be obtained from the Manager, Bristol Airport, Bristol. In connection with the Flying Meeting on June 17, a special air service is being arranged to run between Bristol and Brighton for the whole of the ensuing Bristol-Brighton Week. It is hoped to operate this service with a Westland "Wessex." Pilots and aircraft owners intending to visit Bristol on June 17 will greatly assist organisers by giving previous notice of their visit.

Mr. Punch's Summer Suit

SUMMER Time officially commenced last week with the appearance on the bookstalls of the *Punch* Summer Number. Like the Royal Air Force Display, this eagerly awaited event provides abundant pleasure which seems to grow with each succeeding year. This year Mr. Punch and his conspirators—sorry! contributors—are once again at their best, only more so. The coloured illustrations are excellent, apart from the humorous side (splitting variety). One of these, by G. L. Stampa, showing a "little mother" on the crest of a hill intently watching the evolutions of two aeroplanes, being most laughably sad—for her two charges have meanwhile descended the hill under the laws of gravitation in their pram and, thanks to a large stone, are performing priceless aerobatics on their own! Another beautifully coloured picture, by Illingworth, also on aeronautical matters, shows a "Moth" firmly planted in the roof of a cottage, the disturbed owner of which complains "Oh, it's only you, is it? I thought it was one of those confounded motor-cycles kicking up a row again." The registration letters of the machine are partly hidden by a chimney, and we were sorely tempted to consult the "British Corporation Register" and guess the likely owner! But there, fork out your shilling and see for yourselves what good value you will get for it.

Airisms from the Four Winds

Royal Preference

THE PRINCE OF WALES is both a Vice-Admiral of the Navy and an Air Marshal in the Royal Air Force, so it is all the more interesting to note that even when travelling over the sea he honours the Junior Service with his preference. Flying boats are, of course, much quicker than their elderly-sister craft of the Navy, but His Royal Highness, by preferring to fly above the sea rather than plod through it, pays an undoubted compliment to the efficiency and reliability of the Air Force. On Tuesday, May 23, the Prince flew from Falmouth to St. Marys in the Scilly Isles, part of his Duchy of Cornwall, to visit his tenants. The return journey was made in "Southampton" flying-boats of No. 204 Squadron stationed at Mount Batton.

Mrs. Bonney's Flight

MRS. BONNEY, the Australian airwoman who crashed at Bang Baing while on a flight from Australia to England, and who has been staying in Calcutta while her aeroplane was being repaired, left Dum Dum aerodrome at 9 a.m. on Tuesday, May 23, and landed later at Allahabad.

Mittelholzer at it Again

M. WALTER MITTELHOLZER, the well-known Swiss airman, has flown from Zurich to Tunis and back, about 1,500 miles, in his Lockheed machine with a Wright engine, within 16 hr.

German Airwoman's Fatal Crash

FRAULEIN MARGA VON ETZDORF, a well-known German airwoman, crashed at the Mouslimieh aerodrome, Aleppo, on Sunday, May 28, while on a flight to the Far East, and died a few hours later.

Well-Known French Pilot Killed

CAPT. LUDOVIC ARRACHART, a well-known French airman, was killed near Etamps on Tuesday, May 23, while practising for the Deutsch de la Meurthe race. He was flying a Caudron monoplane with a 100 h.p. engine, and it is reported that his engine was heard to stop, he began a turn, and the engine picked up again, but the machine dived to the ground, probably stalled. Capt. Arrachart was flying during the war. In 1923 he won the Coupe Michelin. In 1925 he flew from Paris to Madagascar and back in 90 flying hours, and established a record by flying from Paris to Villa Cisneros. In 1926 he did a non-stop flight from Paris to Basra, and in 1931 he flew to Madagascar again, returning to Marseilles in 6½ days.

Airship for Russia

THE Soviet Commissariat for Aviation have signed an agreement with General Nobile, who is to supervise the erecting of an airship similar—so it is reported—to the *Graf Zeppelin*.

More Landing Grounds

WE have often referred to that very valuable Register of Landing Grounds, which is published by the Aviation Department of the Automobile Association, and the way in which this is kept up to date by the issue of additional schedules from time to time. A new batch has just come out, giving details of landing grounds at Stirling, Auchterarder (Gleneagles), Turnberry (Ayrshire), Creetown (Wigtownshire), Bourne End (Bucks), Carlisle (Cumberland), Clifton Hampden (Oxon).

Lady Heath as Instructress

LADY HEATH, who has been in Ireland for some time, has now joined Iona National Airways, Kildonan aerodrome, Dublin, as instructress in the women's school of aviation, which has just been opened by the company. She will also act as an organiser. Three pupils have already "signed on" for tuition under Lady Heath, while about one hundred men have joined the school. An air pageant is being arranged for Whit-Monday by Lady Heath and the other members of the aerodrome staff.

Northern Heights Model Flying Club

WE are informed that the First Gala Day of the above Club (a notice concerning which was published in our issue of May 18 last), to be held on Whit Sunday, June 4, will open at 11 a.m., and not 2 p.m. as originally announced.

"The Morning Post" Air Race

ENTRIES for the *Morning Post* Air Race, which will be flown at Heston on June 5, are as follows:—

	Aeroplane	Engine
Mrs. Elise Battye	Moth	Gipsy I.
Sir Kenneth Crossley	Moth	Gipsy I.
Lt.-Col. L. A. Strange	Spartan Arrow	Gipsy II.
H. R. A. Kidston (Pilot: O. Cathcart Jones)	D.H. 60 M.	Gipsy II.
C. E. Gardner	Avro Cadet	Genet Major VII.
Lt.-Col. W. Duncan	Moth	Gipsy I.
W. W. Lyle	Moth (metal)	Gipsy I.
W. W. Briscoe	Moth	Gipsy I.
P. H. Pleydell-Bouverie	D.H. 60 G.	Gipsy I.
John South-Downe	D.H. 60 G.	Gipsy I.
N. Kilian (Pilot: W. R. Bannister)	Comper Swift	Pobjoy R.
C. H. Tutt	D.H. 60 G.	Gipsy I.
F. R. Walker	Puss Moth	Gipsy III.
A. C. M. Jackaman	Moth	Gipsy II.
R. G. Cazalet	Puss Moth	Gipsy III.
Air-Commodore J. G. Weir (Pilot: R. A. C. Brie)	Autogiro	Genet, Major Mk. I.
A. E. Clouston	Moth	Gipsy I.
L. Lipton	Moth	Gipsy III.
E. A. Healy	Comper Swift	Pobjoy.
E. Percival	Percival Gull	Napier Javelin.

An A.A. Aviation Appointment

MR. IVOR MCCLURE, who runs the Aviation Department of the A.A. in such an efficient manner, is shortly to have a new assistant in the person of Mr. Nigel Tangye. Mr. Tangye has been Assistant Instructor at the London Aeroplane Club for the last eighteen months, before which he was a student with the de Havilland Aircraft Co., Ltd., private pilot to the late Mrs. Rankin, and pilot with Air Taxis, Ltd. He is a Flying Officer in No. 600 (City of London) (Bomber) Squadron Auxiliary Air Force and was in the Navy from 1923 to 1930.

Another Pobjoy Success

WE have received the following particulars of a light aeroplane long-distance record obtained in Italy with a Pobjoy-engined Nuvoli N5 monoplane. The record was performed on March 10 by Maggiore Ing. Sebastiano Bendendo and Capt. Ing. Prospero Nuvoli. The flight was made from Milan to Brindisi, a distance of 886.677 km. in 4 hr. 56 min. at an average speed of 180 k.p.h. One hundred and five litres of petrol were consumed, giving an average consumption of 4.7 gallons per hr. The oil consumption for the whole trip was 2 kg. By this achievement the existing world's record of Reginensi and Lecointe from Toussous-le-Noble to Marignane on February 18, 1931, was beaten. The machine used by Reginensi and Lecointe was a 40-h.p. Salmson-Farman type F230, which covered the distance of 636.05 km.

Parachute Jumper

CLUB secretaries and others who wish to get a parachute jumper to demonstrate at their displays should get in touch with Mr. Benno G. de Greeuw, 24B, Kildair Terrace, Bayswater (telephone Bayswater 2393). Mr. Greeuw has made a considerable number of jumps at meetings throughout the country, for which purpose he uses a British Russell "Lobe" parachute.

Progress

SOME measure of the commonplaceness of aviation may be gained from the fact that the Architectural Association, 36, Bedford Square, London, W.C.1, have been holding an interesting exhibition of prints and photographs, of balloons, aeroplanes, seaplanes, and flying boats. These show the development of aircraft from 1783 to the present day. Another side of the exhibition shows the development which has taken place in recent years in the design of aerodrome buildings. Many of the photographs in this section are well known to our readers, as they have been used to illustrate lectures given as a result of a survey of the subject, carried out by members of the Aerodrome Committee of the R.I.B.A. A final section is devoted to Air Survey, and consists of a series of photographs illustrating the subject, taken by Aerofilms, in many cases.

TRAINING THE PILOT

Summary of a lecture delivered by Colonel F. P. Lahm, U.S. Army Air Corps, before the Royal Aeronautical Society on Tuesday, May 30, on the occasion of the twenty-first Wilbur Wright Memorial Lecture

IN expressing his appreciation at being invited to appear as the Wilbur Wright Lecturer before the Royal Aeronautical Society, Col. Lahm said it had been his pleasure to come in contact with many of our most distinguished air enthusiasts. In 1906 he competed in the first Gordon Bennett Balloon Race with the Hon. C. S. Rolls and others. It was his good fortune, he said, to view England from the air, and to make an ascent from London in a balloon, also with the Hon. C. S. Rolls. He was entertained by Col. Cody's plans for a heavier-than-air machine, and his projects for crossing the Channel in a boat towed by a kite. It was always a pleasure to recall the names of his distinguished compatriots, Orville and Wilbur Wright. With Orville Wright in September, 1908, he received his initiation in a heavier-than-air machine. In the autumn of 1909 he received his training as a pilot from Wilbur Wright, whose memory they honoured that evening. He considered himself fortunate to have sat at the feet of one of the fathers of flight and to have absorbed from him his earliest impressions of flying training. His quiet manner, his even temperament, his unassuming confidence in himself and his machine, were ever a help and inspiration to a beginner attempting to master an art about which so little was known.

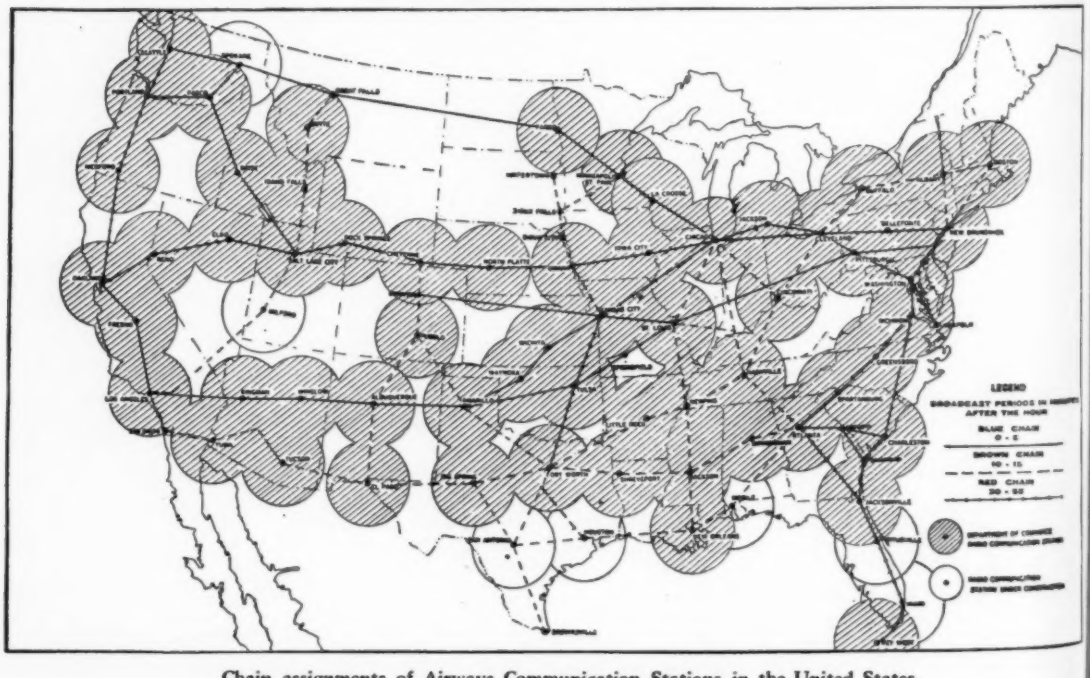
Early Training

Many of the early pilots were self-taught, feeling their way gradually, running the plane along the ground, then short hops, and so into the air, gradually accomplishing the more difficult feat of turning ; at one time the plan of giving land pilots first instruction on seaplanes was tried, but soon abandoned. It was interesting to recall some of the methods and implements used by pilots in early training in 1909, in order to show the progress in the intervening twenty-four years. The Wright brothers used the dual method of instruction from the beginning, taking the student into the air at once as the plane was not equipped with wheels. Their training flights were invariably at low altitudes, generally twenty or thirty feet high, which was considered safest in the case of forced landings. When more intricate manœuvres were introduced it became necessary to fly higher.

The only instrument used in 1909 was a short piece of tape or string, hung from the cross-piece connecting the landing skids and plainly visible to the pilot and pupil. If, in turning, the string remained parallel to the landing skid the turn was correct. The 30 h.p. machine on which the lecturer learned to fly had no landing wheels, the take-off being made from a cradle with two tandem wheels running on a monorail. On reaching the end of the track a pull on the elevator control raised the plane into the air, leaving the cradle on the ground. Landing on the two long runners was comparatively easy, the landing speed being low, and from the open seat on the edge of the lower wing the pilot could measure his distance from the ground with the greatest accuracy. But preparation for the next take-off was inclined to be lengthy and tiresome. To assist the take-off the power of the engine was augmented by ropes which ran on pulleys from the plane to the end of the track, then to a heavy weight which, in falling, pulled the plane forward. A speed of 25 m.p.h. was attained by the time the machine reached the end of the rail.

Direct feed with no carburetter necessitated holding a petrol-soaked rag over the intake to start the motor, while to stop it one hand was removed from the controls long enough to strike a string overhead, thus releasing the compression of the cylinders, and all the landings were made with dead engine. Elevator, rudder and aileron control was obtained by two levers, one in each hand, while one foot operated the spark advance, which was the only means of regulating the speed of the engine. The lack of surplus power and the clear vision of the ground permitted an accuracy in landing which was made more difficult nowadays by the often over-powered machines and bad views in enclosed cockpits.

The student sat at the middle of the leading edge of the lower wing. The elevator was operated by two sticks, one in the pilot's left hand and one in the student's right, while the ailerons and rudder were operated by a single stick between instructor and student, thus in the in-



Chain assignments of Airways Communication Stations in the United States.

instructor's right and the student's left hand. By 1915-16 higher power had caused a change in instructional methods, dual instruction being given at a greater height.

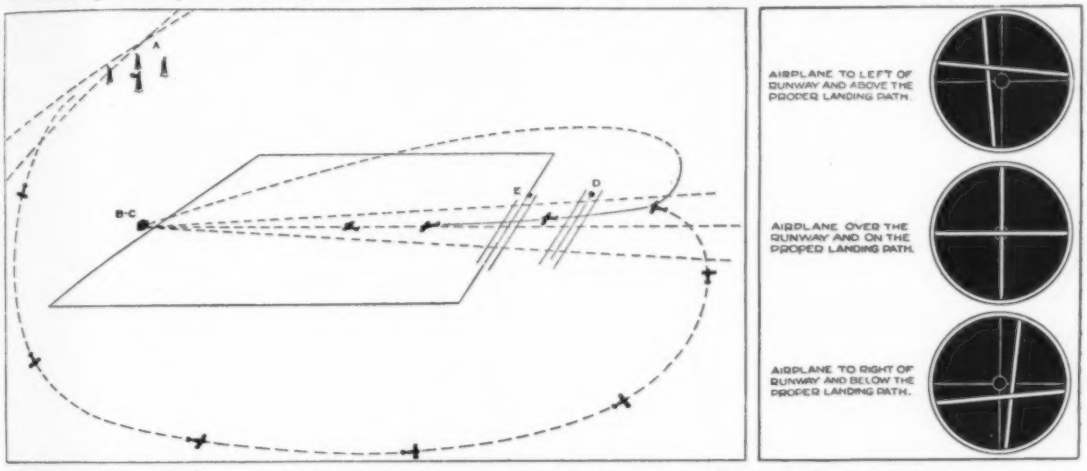
The World War, with the advent of high-powered and much faster machines and the need for advanced dual in aerobatics so necessary in aerial warfare, revolutionised the methods of instruction.

Selection of Pilots

Pilots who wish to fly must possess what was often termed "an inherent flying ability," but how best this psychological factor could be interpreted into practical training, and how to determine which individuals possessed this quality, could only be discovered by experience.

Selection of Training Equipment

Choice of training equipment was controversial, opinions differing from the adoption of an all-through, all-purpose training plane to a series of planes with varying characteristics. The object of training varied, depending on the type or types of plane which the student would eventually be called upon to fly, so naturally the training plane or


A
B-C
D
E
AIRPLANE TO LEFT OF RUNWAY AND ABOVE THE PROPER LANDING PATH.
AIRPLANE OVER THE RUNWAY AND ON THE PROPER LANDING PATH.
AIRPLANE TO RIGHT OF RUNWAY AND BELOW THE PROPER LANDING PATH.

Left: Aeroplane landing by means of radio system for blind landing. A indicates the location of the main radio range beacon, B and C the runway localising beacon and landing beam, and D and E the marker beacons. On the right, the dial of the combined instrument used in landing by radio.

planes which would fulfill the requirements for the private pilot would not fill those for the transport or military pilot. It was not possible to train the students on the type of plane he would eventually use, for all beginners required a comparatively light, easily controlled machine, easy to take off and especially easy to land, strong to stand the punishment of hard landings and easy to get out of unusual positions. Aircraft design had advanced to the point at which training machines to meet these requirements could be turned out.

Instruments

Instruments should be few and simple, an altimeter, an air-speed indicator and a tachometer (rev. counter) being the minimum, but they must be plainly visible. The pilot should be free to use his eyes outside the machine. No student could tell without instruments how fast his engine was running, the height at which he was flying, and to be able to check his speed, especially while gliding into land, was very necessary. The thermometer might be added to give warning of an over-heated engine.

The Instructor

A good pilot was not necessarily a good instructor. Instructors varied from the exigent, over-critical, unduly hasty and abrupt to the over-sympathetic, but perhaps it was just as well to have some variety in this respect, as students themselves varied from the over-confident to the timid. A good instructor must be a good pilot, study each pupil from a psychological point of view, have patience, and have a firm determination to make a good pilot out of every student who came under him.

Object of Training

Pilots might be divided into three classes: (1) The private pilot; (2) the commercial pilot; (3) the military pilot.

Requirements of training for these three classes varied. The private pilot had to learn to handle his plane in the air and on the ground without endangering himself or others, and he must be familiar with traffic rules. The private pilot was able to select his own time and weather for flying, and it was assumed that he would not take the chances which were necessary to commercial and military pilots.

The aeronautics branch of the U.S. Department of Commerce divided commercial pilots into three classes. Limited commercial, transport, and scheduled air transport.

Limited commercial pilots were permitted to carry passengers for hire within the areas mentioned in their licences, usually within ten miles of a designated air port. The tests for licences varied in strictness from the solo pilot's licence to the scheduled air transport pilot's licence. Recognising the necessity for further safeguarding the lives of passengers on regular air transport lines, many of which operated through the hours of darkness, the Department of Commerce had prescribed what was called the scheduled Air Transport Rating, applicable to pilots flying airplanes engaged in scheduled operation to interstate air transport service. These pilots must have flown twelve hundred hours of certified solo time within the last eight years, of which at least five hundred hours must have been cross-country and seventy-five solo hours' night flying, of which at least 50 per cent. must be cross-country over illuminated airways. The examination included a practicable and theoretical test on the use of directional radio and other available airways aids to navigating, including tests in meteorology with respect to weather analysis and forecasting. Practical tests were given in hooded cockpits, under the conditions of instrument flying, performing the following manœuvres:—(*a*) Straight level flight; (*b*) moderate banks; (*c*) minimum glides and maximum climbs, and approaches to stalled attitudes of flight; (*d*) climbing turns; (*e*) recovery from various positions.

Military pilots must be unmarried, male citizens of the United States, between the ages of 20 and 28, who must be able to pass an examination showing a certain educational standard and who must be of sound physique. These would receive training in such subjects as meteorology, engines, navigation, radio and gunnery. They were given about 265 hours in the air before receiving a commission.

A student must have two qualifications which were quite different, but both essential to a good pilot, that is, technique—the ability to handle his controls smoothly and logically—and judgment. These two qualities were not always found together. Many students might acquire technique, but when faced with an emergency they might utterly fail in the very essential requisite of good judgment. A student might even learn by tuition how to make a correct forced landing, but under stress of emergency might forget what he had learnt.

Instruction

The instructor started with a familiar talk with his student in order to learn his personal characteristics and temperament. He instructed him in the action of the controls, saw that his parachute was properly fitted, that he was comfortable in the machine, stressing the necessity of keeping relaxed at all times, thereby avoiding that feeling of tenseness which so often caused a too harsh grip on the controls. It was a good thing, if he had never been in the air, to give him a preliminary passenger flight, avoiding aerobatics, with the object of inspiring confidence both in the machine and in himself, and allowing him to feel the controls. After six or ten hours of dual instruction the student should be ready for his first solo; if he was not there was probably something abnormal about him. If it was a clear case of lack of inherent flying ability he should be told so at once and advised to choose some other career, both for his own good and for the good of those for whose safety he might later be responsible. On the other hand, he might be a slow student, one who learned slowly but surely. This slowness might be due to some outside influence, which on tactful investigation could be determined and overcome. It was popularly supposed that the very young man made the best pilot, and undoubtedly in time of war the energy and enthusiasm of youth were important factors, but experience had shown that where a high standard of efficiency was demanded, the ones most likely to meet this standard were between twenty-four and twenty-six. At an early stage of instruction, experience of stalls, loops and spins should be given to show the pupil the ease of recovery, and thus increase confidence both in himself and the machine. His initial solo practice should consist simply of take-offs, circuits of the aerodrome, and landings, and the lecturer stressed the importance of interspersing his solo practice with frequent returns to dual. Next should come cross-wind take-offs and landings, landings to a mark with the engine throttled back, landings over an obstacle, cross-country flying and, later, aerobatics, which were not essential for the private pilot but indispensable to the military, and highly desirable for the commercial. Aerial navigation was another requirement to all types of pilots. Ground training in various subjects should be concurrent with flying instruction.

All-through or Stage System

Another controversial question was whether the "all-through" system was superior to the "stage" system, the "all-through" system meaning that the student was carried through the various stages of instruction by the same instructor, and the "stage" system, progression from one stage to another with various instructors. A happy combination of the two, in the lecturer's opinion, was the best.

Instrument Flying

Blind or instrument flying was an absolutely necessary requirement for commercial and military pilots. Pilots who claimed they were able to fly entirely by "instinct" were apt to exaggerate their own capabilities, over-correction of an error being a common fault. Simple instruments were now available based on the principle of furnishing an artificial horizon when the real horizon was not visible. A common form was a miniature aeroplane which assumed the attitude of the actual machine, the pilot simply operating his controls to keep the miniature plane in the position he wished to assume. Eight to ten hours' instruction in instrument flying was normally sufficient.

Experience in Traffic

Some students were by nature unobservant. They must be taught to be ever on the alert watching for other machines, particularly in taking off and landing.

The Mechanical Pilot

There were students who were inclined to fly entirely by rule of thumb, relying on instruments even in clear weather. These could never acquire the high degree of skill necessary to a first-class pilot.

Reaching a Peak

There were pilots who might reach a point in instruction beyond which they were not capable of progressing. A student might be entirely satisfactory as a private pilot but incapable of reaching a degree of efficiency required in a commercial or military pilot.

Over-confident Period

There came a time in the course of training when the average student became over-confident, normally after passing through the stage of aerobatics. That was after seventy-five to a hundred hours in the air. This period was responsible for many crashes.

Air Transport To-day

In the United States, air transport pilots were required to establish their ability to fly at night and in fog. They might only carry passengers for hire in licensed aircraft of types on their licences. They must be thoroughly familiar with the route flown, must not fly at less than 500 ft. unless there was definite indication of improving weather ahead, or there was sufficient ceiling to permit safe manœuvring, with visibility of at least two miles in daylight or from beacon light to beacon light at night. Direction wireless must be in operation to receive weather reports. And the pilot must believe he could accomplish the flight with safety. Air transport planes must be pronounced airworthy by the Department of Commerce. In daylight they must have a complete set of instruments, including duplicate turn and bank indicators, compass, air-speed indicator, flying indicator, sensitive type altimeter adjustable for changes in barometic pressure, thermometer, clock or watch, complete set of engine instruments, fire extinguisher, first-aid kits, and maps of the route and seventy-five miles around. For night flying electric landing lights, navigation lights, instrument board lights, flash lights and safety belts. A reserve of 35 per cent. fuel was required. A co-pilot was required on planes having a capacity of over 15 passengers or on planes of over 15,000 lb. gross weight, and where pilots flew five or more hours in one day in aircraft with a capacity of above eight passengers.

The main airways were provided with approximately ninety radio range beacons, each with an effective range of about a hundred miles. These were supplemented by some eighty radio marker beacons, which served to mark strategic points along the airways, such as mountains and junction points, etc. They were equipped with two-way radio 'phones for communication with passing aircraft.

The Department of Commerce provided about 20,000 miles of lighted airways, marked by rotating beacons, ten to fifteen miles apart, of one million candle-power and showing six flashes per minute. With them were red or green course lights, which flashed a signal indicating just which beacon in the series the pilot saw. When he came to a beacon showing a green course light instead of a red he would find an intermediate landing field marked with boundary lights. These intermediate landing grounds were located about 50 miles apart.

Weather conditions were broadcast every hour. A new development in teletypewriter transmission enabled detailed weather maps to be broadcast.

Experiments were being carried out with radio landing beacons. The system was based on four separate elements: A runaway localising beacon situated just off the air port, which guided the pilot on to the proper vertical plane of approach; adjacent to this beacon was a landing beam which sent out a radio beam with forty degrees horizontal spread and inclined upwards across the aerodrome; two marker beacons, one a thousand feet from the border of the landing ground, and the other directly over the border. The pilot followed a curved course underneath the landing beam so that its signal strength was constant on his receiving instrument. About 1,000 ft. before reaching the edge of the landing ground he received a buzz in the earphone, and a different-sounding buzz told him when he was over the border of the aerodrome. A pointer on a simple instrument showed him any deviation from the landing beam.

Air Traffic Control

Investigation had shown that approximately 25 planes an hour represented an airport's capacity. There were various designs for airports. One in which a single movement landing area was provided with runaways in as many as eight different directions. Another in which a number of sets of double runaways were provided, one in each set being reserved for take-offs and for one landings. A third design, called the tandem landing area, where there was a constant change of wind. The leeward end was reserved for landings and the windward for take-offs. Another was where landings were made to the right and take-offs to the left of fixed traffic axes.

The Future

When we abolished war there would be no further need for military pilots. The lecturer regretted that he could not set a date for the inauguration of this happy era, and, much as we should all like to see it, for the present we should continue to train pilots for service in war.

Mechanical controls were appearing to lighten the burden of the pilot, and improvements in radio communications and in devices for landing with little or no visibility were all simplifying commercial aviation.

Aviation was but in its infancy, scarcely more than a quarter of a century old. The machine of the future would be easier to operate than those of 1933. Already we had indications in the Autogiro, in wheel brakes, in slotted wings, flaps and various other devices. But to counterbalance the easier handling of the machine of the future, the pilot would be faced with greater responsibilities. With the advent of the cheaper and relatively foolproof machine we must foresee the day when aeroplanes would be as common as automobiles. Control of traffic in the air would then be a real problem, one from which the lame, the halt, and the blind, or even the partially blind, must be eliminated ; one from which the irresponsible joy-rider must be barred, and licences only granted to really reliable persons. To-day we crossed the Channel or the Mediterranean by air. To-morrow we would cross the oceans. To-day we flew in the atmosphere, right above mountains ten to fifteen hundred feet high ; to-morrow we would fly in the stratosphere, at eighty thousand feet or even higher. Surely the type of pilot to meet these responsibilities must be at least as good as the one of to-day and his training at léast as thorough.

Mr. C. R. Fairey, President of the R.Ae.S., was in the chair at the Wilbur Wright lecture. Before the lecture the following medals were presented: The Gold Medal of the R.Ae.S. to Sir Richard Glazebrook; the Simms Gold Medal to Mr. P. Salmon for his paper on "Catapults"; the Wakefield Gold Medal to Mr. L. G. Frise for his aileron; the Taylor Gold Medal to Dr. Lachmann for paper on "Control beyond the Stall"; the Silver Medal of the R.Ae.S. to Mr. de la Cierva for his work on the Autogiro, to Mr. Fedden for his work on air-cooled engines, and to Mr. Hollis-Williams for the design of the Fairley long-range monoplane. The British Silver Medal for Aeronautics was awarded to Mr. Uwins for his altitude record flight, and to Sq. Ldr. Gayford and Flt. Lt. Nicholetts for their world's record long-distance flight. After the lecture the Annual Council Dinner was held at the Hyde Park Hotel.

TRANUM'S RECORD PARACHUTE JUMP

A NEW world's record for the delayed-opening parachute jump was set up by Mr. John Tranum on May 24 with Irvin parachutes. He fell 17,250 ft. in 1 min. 27 sec. before opening his parachute. The previous record was held by an American, Mr. E. S. Manning, who dropped 15,265 ft. with an Irvin parachute before pulling the rip-cord ring. Mr. John Tranum left Heston Air Park in a Hawker "Hart" day bomber piloted by Mr. Jerry Sayers, and flew to the Royal Air Force aerodrome at Netheravon, Wilts, arriving there at an altitude of 4,000 ft. The climb was continued to about 21,000 ft., where thick mist was encountered, and as clear air was not reached until they had descended to 17,000 ft., which was too low for the purpose of making the record, they landed.

Two hours later the "Hart" took off and climbed to 21,000 ft. again, and here a gap in the clouds was found suitable for Tranum to drop through. He had only four minutes' supply of oxygen left when he stepped off the wing. He somersaulted quickly for the first 5,000 ft., but he had no difficulty in keeping his eye on the stop watch strapped to his wrist. The rate of his fall at the start was about 140 m.p.h., but when he pulled the rip cord after dropping 17,250 ft. his velocity was 119 m.p.h., which is the terminal velocity for a falling man in a vertical path.

Tranum landed safely close to a tree, and the first to reach him was Mr. Irvin, who flew to the spot in his "Puss Moth," and found the parachutist little the worse for his long fall.

The value of the long-delayed-opening jump is its proof that an airman may rely upon resorting to his parachute at very high altitudes and fall a long distance if circumstances demand it without any fear of the consequences. The Irvin parachute is designed to bear a shock load of 200 lb. falling at any speed up to 400 miles per hour.

The accompanying illustration shows Mr. John Tranum, by way of preliminary training for his record jump, recently undergoing a test in the exhaust chamber at Siebe Gormans, of Westminster, wherein similar conditions to those experienced during such a drop could be represented.

Mr. John Tranum under test. (FLIGHT *Photo.*)

"The Prince of Wales" Film

THE PRINCE OF WALES, on Wednesday, May 17, paid a visit to the Gaumont-British Studios, Shepherd's Bush, to have a test for the prologue to his own film, entitled "The Prince of Wales." His Royal Highness, accompanied by Prince George and attended by Sir Godfrey Thomas, also saw the film of the Houston Mount Everest flight. Sqd. Ldr. Lord Clydesdale and Air Commodore P. F. M. Fellowes were present to describe the film. By the courtesy of the Gaumont-British Picture Corporation the film is to have its first production in aid of the Newspaper Press Fund ; thereafter a proportion of all receipts will be given to charity.

Cranwell and Heston Aerodromes

AIR MINISTRY Notice to Airmen, No. 22, of the year 1933, states that an air light has been installed at the top of the tower of the Cadet College building at Cranwell, 140 ft. above the ground. The light is operated from dusk to dawn and shows a white flashing light every three seconds. The range of visibility in clear weather is about 20 miles. Notice No. 24 of the year 1933 states that the orange-coloured electric boundary lights at Heston aerodrome are out of action. Red hurricane lamps will be substituted subject to notice of an intending landing after dark being given to Airwork, Ltd., before 2000 hours (8 p.m.).

Correspondence

The Editor does not hold himself responsible for opinions expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters intended for insertion in these columns.

HANDICAPPING AND ENGINE CAPACITY

[2859] I was extremely interested to note your editorial remarks in your issue of FLIGHT of May 18, with regard to the basis of classification for aircraft engines in the Deutsch Cup. To attempt to handicap a wide range of engine sizes without taking into consideration the aircraft to which individual engines are fitted, will result in a position where it is impossible for the ordinary owner of aircraft, or even, to some extent, the management of operating companies, being able to choose between one engine and another, or between one aircraft and another, the basis of handicapping by engine capacity being equivalent to a handicapping arrived at by calculations on wing loading.

In so far as your editorial is concerned with this matter, I find myself in full agreement with your remarks, but with reference to your notes on actual engine design, I am afraid I do not altogether agree with what you say.

In the first case, there are other methods of supercharging engines than those which are at present confined to military type engines, *i.e.*, the centrifugal type blower. The manufacture and fitting to an existing, or even new, design engine, of one of these components is admittedly a highly technical and very expensive matter. They originate probably from the type of blower experimented with at the Royal Aircraft Establishment during the war, and, to some extent, from the unit which has proved fairly satisfactory in the United States. It is the writer's personal opinion that the rather complicated gearing and methods of mounting necessitated by these blowers is hardly justifiable, except where expense is not counted, such as highly specialised military aircraft power units.

Very little has been done in this country or abroad in combining the usual type of internal-combustion aircraft unit with the positive displacement type of supercharger. On the face of things it seems that everything has been sacrificed to obtain a performance at high altitudes with a given type of engine, on which the feature of mechanical safety is so low that it necessitates the type of blower which does not come into operation at ground levels, so reducing the stresses on such an engine to approximately those obtained with atmospheric induction.

I fully agree with your remarks that this type of blower is a very noisy instrument, but I differ with your implied view that all blowers are necessarily noisy, or even expensive.

In designing aircraft engines one is absolutely obliged to use the very best alloys in both steels and ultra-light metals to obtain the utmost possible reliability. By incorporating certain features which are not every-day practice, it is definitely possible to produce a blown unit which, on the usual basis of comparison, that of price per brake horse-power, compares very favourably with existing designs. With modern methods of production it is possible to cost out an engine, providing one knows the actual weight of each type of material used in the construction, other things, such as manufacture, wages, overheads and standing charges usually being a fixed item. I would suggest that if we take, for instance, the 370-b.h.p. "Delage" engine as illustrated in the above-mentioned copy of FLIGHT, it would be found that in production this engine on a basis of £'s per b.h.p., would not be to any extent unfavourably handicapped in the already existing market; this is taking into consideration the fact that the "Delage" engine is obviously not designed for simplicity of manufacture. From the point of view of noise, it will probably prove to be a rather bad offender, due to using tooth-type compressors which inevitably produce their characteristic whine. Also the reduction gear of the straight, helical or chevron toothed type when subjected to the heavy tooth loading imposed in the usual aircraft engine is generally very noisy.

Epicyclic reduction gear can be made moderately quiet in use, but again is heavy, expensive, and to some extent bulky. I would suggest that the use of internal gears for this very important point would result in practically noiseless running, combined with moderate lightness and very adequate strength, combined with low tooth pressures.

Petrol consumption is definitely an all-important feature of an aircraft engine, and at first sight it does seem that the incorporation of a blower would immediately result in a net mechanical loss overall, resulting therefrom in increased petrol consumption. As a matter of warning to those people who have maintained that it must always, perforce, prove so, I would suggest that they read up the results of some tests carried out a few years ago by Monsieur Ettoire Bugatti on one of his 2,300-c.c. "Straight-Eight" engines, when it was found that this engine ran without a supercharger at a petrol consumption of 11 miles to the gallon, and when fitted with a Roots-type compressor of his own design, resulted in a decrease to the figure of approximately 18 miles to the gallon, at the same time providing a very much higher power output, which appears to prove that it is possible to increase greatly the thermal efficiency of an internal-combustion engine by the correct use of a blower.

To some extent this has also been found in experiments conducted over a period of the last eight or ten years by the writer. It may be mentioned that in all these cases the blower used was of the positive displacement type.

It seems, therefore, that this question of blower use is profoundly wrapped up in the question of complete engine design; chiefly, of course, it is a question of suitable compression ratios and valve timing. As a secondary, I would suggest a close study of the relation between port areas, gas speeds and induction manifolding. The weight of an aircraft unit for a given brake horse-power developed is only secondary when compared to fuel consumption. For this reason it appears that the Diesel or compression ignition engine with a system of separate fuel injection will win every time.

There are two features in these engines which, at the present date, and in the writer's opinion, prevent their universal use as power units for aircraft, one being the slow speed (relative) at which it is necessary to operate these engines, and, secondly, the vibration to which they are naturally prone.

Throughout the age of development of internal-combustion engines, as we know them to-day, there has always been, as a result of improvement, a decrease in cubic capacities, and together with it an increase in the only complete basis of comparison of an engine's efficiency, *i.e.*, ton-miles per gallon. For complete aircraft, I would suggest ton-miles per hour per gallon, the tons being pay load only.

I think that it is only logical to expect development to continue along the lines which are already laid down for us, and that eventually we shall come to the time when internal-combustion engines are reduced in overall sizes, and, therefore, weight, particularly by the reduction in cubic capacity, followed by an increase in their mean effective pressures, revolutions per minute, or number of strokes per revolution, or a combination of all these features.

GERALD P. DEVANEY,
Production Engineer,
Low Engineering Co., Ltd.

London, E.C.2.
May 22, 1933.

STEAM-DRIVEN AIRCRAFT

[2860] I was much interested in a short note appearing in your last issue—*re* Steam Airplane. As an engineer of many years' experience, the steam engine is still my pet, and I have always thought that it would one day take its place in the front rank of small high-powered units. With this in view, I have for a number of years been experimenting with models based on an entirely new principle, which have so far been very successful, eliminating, as it does, all the troubles associated with the satisfactory operation of this type of engine.

Progress has been rather slow, however, as this is only spare time work, due to the fact that I have to earn my living; but I hope one day to see my new engine adopted and used by many of the leading aircraft companies in this country.

H. S. WHITE.

Cricklewood,
London, N.W.2.
May 17, 1933.

THE ROYAL AIR FORCE

London Gazette, May 23, 1933.

General Duties Branch

Air Chief Marshal Sir E. L. Ellington, K.C.B., C.M.G., C.B.E., Principal Air Aide-de-Camp to the King, is appointed Chief of the Air Staff (May 22); Marshal of the Royal Air Force Sir J. M. Salmond, G.C.B., C.M.G., C.V.O., D.S.O., LL.D., relinquishes his appointment as additional (temporary) member of the Air Council (May 22); Marshal of the Royal Air Force Sir J. M. Salmond, G.C.B., C.M.G., C.V.O., D.S.O., LL.D., on ceasing to be employed is placed on half pay (May 22)

The following are granted temp. commns. as Flying Officers on attachment to R.A.F. (May 14):—Sub.-Lts., R.N., C. E. H. Batham, A. W. Goldsmith, E. R. C. Morris, J. S. Stead, E. H. G. Stokes, Lt. R.M., B. W. de Courcey-Ireland. The following Pilot Officers are promoted to rank of Flying Officer: G. A. Bartlett, M. H. Dwyer (March 11); G. Atkinson, J. H. A. Chapman, R. W. Hay, L. W. Oliver, J. F. L. Zorn (April 11).

F./O. B. A. Fraser takes rank and precedence as if his appointment as Flying Officer bore date Dec. 14, 1931, immediately following F./O. A. H. Button on the gradation list. Reduction takes effect from May 4; F./O. R. R. Frith relinquishes his short service commn. on transfer to the R.Australian Air Force Reserve (May 22); F./O. R. W. G. Love is cashiered by sentence of General Court Martial (April 29).

Memorandum

183977 Cadet R. M. Wood is granted an hon. commn. as Sec. Lt. with effect from date of demobilisation.

ERRATUM

In *Gazette* of May 16 (FLIGHT, May 25, 1933, p. 505).—Substitution notice concerning Flight Lt. E. A. Sullock, A.F.C. For April 6, read April 16.

ROYAL AIR FORCE RESERVE
RESERVE OF AIR FORCE OFFICERS

General Duties Branch

The following Flying Officers are transferred from Class A to Class C:—A. E. Hill (Oct. 6, 1932); E. Fulford (May 18); H. J. L. Jones (May 22).

F./O. H. H. Perry is transferred from Class AA (i) to Class C (Nov. 6, 1932); F./O. R. D. Crofton is transferred from Class AA (ii) to Class C (Feb. 14); F./O. F. T. Digby, D.S.O., D.S.C., is transferred from Class C to Class A (April 25); F./O. P. Wilson relinquishes his commn. on completion of service and is permitted to retain his rank (May 1): the commn. of Pilot Officer on probation I. McL. Barratt is terminated on cessation of duty (April 29); *Gazette* Feb. 28 concerning F./O. A. E. Hill is cancelled.

SPECIAL RESERVE

General Duties Branch

The following Pilot Officers on probation are confirmed in rank:—A. D. Pickup (April 22); J. Peel, D. O. Young (April 29).

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:

General Duties Branch

Group Captain the Hon. L. J. E. Twisleton-Wykeham-Fiennes, to R.A.F. Training Base, Leuchars, 15.5.33, to Command, *vice* Wing-Com. B. E. Baker, D.S.O., M.C., A.F.C.

Flight Lieutenants: F. S. O'Hanlon, to Air Ministry, Depart. of Air Member for Supply and Research (D.T.D.), 15.5.33. C. Walker, to Administrative Wing, Halton, 13.5.33. W. M. Yool, to No. 9 (B.) Sqdn., Boscombe Down, 27.4.33. J. N. Jaques, to No. 55 (B.) Sqdn., Hinaidi, Iraq, 13.5.33. R. M. Davy, to R.A.F. Base, Gosport, 13.5.33. F. Kirk, to Marine Aircraft Experimental Estabt., Felixstowe, 13.5.33. E. J. L. Hope, A.F.C., to H.Q., Coastal Area, Lee-on-Solent, 18.5.33.

Flying Officers: F. B. H. Hayward, to No. 1 Armament Training Camp, Catfoss, 11.5.33. F. J. B. Keast, to Coast Defence Co-operation Flight, Eastchurch, 9.5.33. A. C. Larmuth, to No. 33 (B.) Sqdn., Bicester, 15.5.33. J. C. Macdonald, to Air Armament School, Eastchurch, 15.5.33. C. H. Turner, to No. 16 (A.C.) Sqdn., Old Sarum, 12.5.33. C. R. J. Hawkins, to No. 2 Armament Training Camp, North Coates Fitties, 25.3.33.

Pilot Officer J. M. D. Ker, to No. 26 (A.C.) Sqdn., Catterick, 13.5.33.

Stores Branch

Flight Lieutenant E. G. M. Charleson, to No. 2 Flying Training School, Digby, 16.5.33.

Flying Officer H. D. Jackman, to H.Q., R.A.F., Cranwell, 15.5.33.

Accountant Branch

Flight Lieutenant F. J. S. Short, to Aeroplane and Armament Experimental Estabt., Martlesham Heath, 17.5.33.

Medical Branch

Squadron Leader T. J. D. Atteridge, to Station H.Q., Amman, Palestine, 1.4.33.

Flight Lieutenants: E. Thompson, to Princess Mary's R.A.F. Hospital, Halton, 16.5.33. G. A. M. Knight, to Station H.Q., Worthy Down, 22.5.33.

NAVAL APPOINTMENTS

The following appointments have been made by the Admiralty:—

Lieut.-Com. (F/O., R.A.F.).—J. H. I. Wood, to *Dorsetshire*, for 443 Flight.

Lieut.-Com. (Flt. Lt., R.A.F.).—A. A. Murray, to *Leander*, for 407 Flight, in command (May 22).

Lieut. (F/O., R.A.F.).—F. W. N. Bassett, to *Renown*, for 444 Flight (May 22).

PROMOTIONS

Sub-Lieuts. (F/O., R.A.F.).—B. J. C. Wise, N. McI. Kemp and J. L. Hallewell, to rank of Lieut. (seny. May 16).

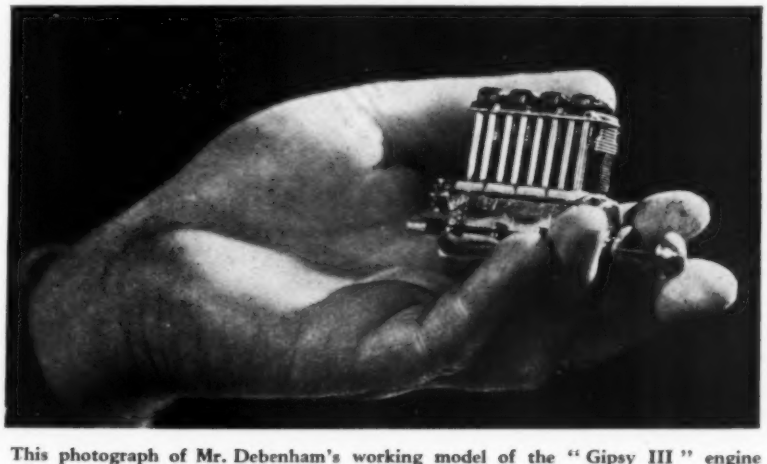
Royal Air Force. Change in the Higher Command

THE Air Ministry announces the following appointment:—Group Capt. Sydney William Smith, O.B.E., now Station Commander, Royal Air Force, Manston, to be Officer Commanding, Royal Air Force, Far East, as from about October, 1933, *vice* Group Capt. A. H. Jackson.

Group Capt. S. W. Smith was seconded to the Royal Flying Corps from the Royal Artillery in September, 1914, and after a period of service in France was employed first as flying instructor and then in command of various training and other units at home. In August, 1919, he obtained a permanent commission in the Royal Air Force, and subsequently served in the Middle East and Iraq Commands, during which period he participated in the first transfer of a complete squadron by air from Egypt to Iraq. On return to this country in 1923, he took a two years' course at the Staff College, Camberley, and successively served as chief air staff officer at Cranwell and on air staff duties at the Air Ministry until appointed in 1929 to command the Royal Air Force Flying Boat Station at Cattewater (now Mount Batten). In 1931 he was appointed to his present post as station commander at Manston. Group Capt. Smith received the O.B.E. in 1919 for distinguished service during the Great War and holds the General Service Medal with clasp Kurdistan for operations in 1923.

A HANDFUL

THE engine shown in the accompanying illustration is a very ingenious little working model of a "Gipsy III." Driven by compressed air, the inlet for which can be seen protruding from the left of the crankcase, this model develops about $\frac{1}{50}$ h.p. at 2,500 revolutions, with a running duration of 1 min. It weighs 2½ oz., and the container, which is about 16 in. long, weighs another 6 oz. The induction and exhaust is through grooves machined in a "camshaft" rotating within a slieve and geared from the crankshaft, while oil is automatically sucked in and splashed over the walls of the crankcase and cylinders. The designer and maker, Mr. C. H. Debenham, of 7, Princes Park Avenue, Golders Green, hopes to fit an engine of this design in a model of a Comper "Streak."



This photograph of Mr. Debenham's working model of the "Gipsy III" engine gives an excellent idea of its minuteness. (FLIGHT *Photo.*)

AIR POST STAMPS

By DOUGLAS ARMSTRONG

(*Editor of "Stamp Collecting"*)

At Last a British Air Stamp

AT long last Great Britain has achieved that "consummation, most devoutly to be wished," an air mail stamp of its own—albeit of a semi-official character only. An oblong label printed in pale blue and of the nominal value of 3d., it shows a large passenger aeroplane on the ground with inscription "G.W.R. Air Mail" below, in white letters upon a coloured background. A serial number in red is added in the top left-hand corner. Issued with the authority of the Postmaster-General, its status is the same as that of an ordinary railway letter stamp, and it was first used on letters carried over the Cardiff-Plymouth air line on May 15. Later, on May 22, the service was extended to Birmingham.

Now that this innovation has received the official blessing it may be that the postal authorities will be prevailed upon to reconsider the introduction of a Government air mail stamp in connection with the Imperial air services.

New Italian Trans-Atlantic Stamps

As was to be expected, special stamps have been provided by the Italian Post Office in connection with the forthcoming Transatlantic formation flight by twenty Savoia-Marchetti hydroplanes from Rome to Chicago via Scotland, Iceland, Greenland, Labrador and Canada to the great Century of Progress Fair at the Windy City.

These stamps are of an entirely novel character, being actually printed and issued in strips of three—two large pictorial vignettes connected by a smaller one bearing a portrait of the King of Italy, flanked by the Fascist emblems. The left-hand stamp shows the Italian flag in its natural colours against a blue ground, with inscription "Italia Posta Aerea" at the top and "Raccomandata Per Espresso" at the foot. Overprinted upon this portion of the triptic is the name of one of the pilots (twenty to each sheet, in a vertical row). The right-hand vignette depicts the ruins of the Forum on one rim of a hemisphere and the New York skyline on the other, with seaplanes flying between and carries at the foot the inscription "Crociera Nord Atlantica." The value of this portion is Lire 44.75, making, with the L. 5.25 of the centre stamp, a total of 50 Lire, which is the charge for letters transmitted all the way to Chicago. The other strip of three stamps is identical as regards the design of the left-hand and centre portions, except that the frame colours are reversed, whilst the right-hand stamp bears an allegorical vignette representing the Spirit of Flight in a Roman chariot, drawn by three horses, following in the wake of the flying boats, in blue with a red surround. The face value of this and the central vignette totals L.25, and defrays the cost of an air-mail letter as far as Iceland only. They are finely printed in rotogravure, from the designs of Prof. C. Mezzana, by the Italian State Printing Office, Rome, in sheets made up of twenty groups of three.

Separate stamp issues are to be made for Tripoli, Benghasi and Rhodes for use on the air-mail connections from those places, whilst for the Ægean Islands a distinctive over-print is to be applied to the regular Italian set described above.

The sale of these special stamps will cease when General Balbo takes off with his squadron on or about June 5.

Latvia-Africa Flight

For the purpose of a special mail to be carried on the flight to be undertaken by two Latvian pilots from that country to Gambia, on the West Coast of Africa, and back, authority has been given by the Minister of Posts for the over-printing of a limited supply of the existing triangular air-post stamps of Latvia with the words "LATVIA-AFRIKA, 1933." In addition, two new values are to be created by means of surcharging. The issue will thus consist of 5,000 copies each of the values 10 santimu, green; 15 santimu, red; and 25 santimu, blue; plus 2,500 copies only of 50/10 santimu and 1 Lats. on 15 santimu, all in imperforate form.

Lithuania's Latest

On her latest issue of air-mail stamps in triangular format this ancient land continues the pictorial record of her early history, which she inaugurated with those which appeared in July and November of last year. The episodes depicted upon the present series are concerned with the legend of Prince Kestusis and the Christian maiden Birute, with whom he became enamoured and made his bride. First we have a view of the island castle of Trakai, where Kestusis dwelt, upon the values 5c., olive and blue, and 10c., brown and purple. The meeting between Kestusis and Birute is the subject of the 15c., blue and purple, and 20c., chestnut and purple. A likeness of Birute, the well-beloved, adorns the stamps of 40c., ultramarine and purple, and 60c., brown and ultramarine, whilst the denominations 1 L. and 3 L. portray Kestusis and his brother Algirdas, who extended the dominions of the Grand Duchy from the Baltic to the Black Sea.

Alas! it must be recorded that like the two previous issues these stamps were totally unnecessary for air post purposes and have been created at the instigation of a syndicate of stamp dealers by which the major part of the total printing has been underwritten and a few sets only put on sale by the Lithuanian Post Office in order to give them the requisite official status.

More Philippine Commemoratives

The fourth set of special postage stamps issued to commemorate the successful conclusion of air mail flights terminating at Manila (Philippine Islands) made its *début* on April 10 last on the occasion of the arrival from Madrid of the Spanish aviator Ferdinando Rein Loring, when ten of the regular portrait stamps of the Philippines (series 1906) received a distinguishing overprint of a rotating propeller above the inscription "F. Rein—Madrid-Manila Flight 1933" to the total face value of 40,000 pesos.

Patrons for the Apex

Among the distinguished personages who have bestowed their patronage upon the forthcoming London International Air Post Exhibition, 1934 (Apex) are Lord Wakefield of Hythe, Miss Amy Johnson and Mr. J. R. Mollison. Preparations for the event are already well advanced and support has been promised by prominent aero-philatelists all over the world.

IMPORTS AND EXPORTS

AEROPLANES, airships, balloons and parts thereof (not shown separately before 1910).

For 1910 and 1911 figures see FLIGHT for January 25, 1912.
For 1912 and 1913, see FLIGHT for January 17, 1914.
For 1914, see FLIGHT for January 15, 1915, and so on, yearly, the figures for 1932 being given in FLIGHT, January 19, 1933.

	Imports		Exports		Re-exports	
	1932.	1933.	1932.	1933.	1932.	1933.
	£	£	£	£	£	£
Jan. ..	2,456	2,073	122,942	82,963	863	827
Feb. ..	2,503	9,866	181,482	79,357	90	3,050
Mar. ..	1,946	3,760	167,195	126,008	200	821
April..	622	2,236	142,145	121,030	1,128	94
	7,527	17,960	613,764	410,564	2,281	4,792

PUBLICATIONS RECEIVED

Annual Report for 1931, *Apia Observatory, Apia, Western Samoa.* N.Z. Department of Scientific and Industrial Research, Wellington, New Zealand.

Syllabus for Training of Airmen of the Medical and Dental Branches in Medical and Dental Trades and for Promotion to Warrant Officer, 2nd Class, and to Flight Sergeant. Air Publication 985. London: H.M. Stationery Office, W.C.2. Price 1s. net.

Economic Conditions in Belgium in 1932. Report by N. S. Reyntiens, O.B.E. Together with an Annex on the Grand Duchy of Luxemburg. Department of Overseas Trade. No. 546. London: H.M. Stationery Office, W.C.2. Price 4s. net.

The City and Port of Hull. Edited by H. R. Wright. City of Hull Development Committee, Guildhall, Hull.

Der Dritte Weg. By A. Isler and Dr. W. Dollfus. Schweizer Aero-Revue A.G., Bergstr. 22, Oerlikon, Zurich. Price Fr. 3.

NEW COMPANY REGISTERED

CLYDE FLYING BOATS LTD., 225, West George Street, Glasgow, C.2. Registered in Edinburgh. Capital £2,000 in £1 shares. Manufacturers of and dealers in aeroplanes, seaplanes, flying-boats, gliders and aircraft of all kinds, etc. Directors: Miss Alice Whitelaw, Rowmore, Rhu, Dumbartonshire, Thomas W. B. Guthrie, Rowmore, Rhu, Dumbartonshire (naval architect).

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motor.
(The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

APPLIED FOR IN 1931

Published June 1, 1933

24,502. P. N. WILLOUGHBY. Control of aeroplanes, seaplanes, flying-boats. (391,815.)